National Park Service
U.S. Department of Interior

Homestead National Monument of America
Beatrice, Nebraska

Environmental Assessment Homestead Trail Realignment Project Homestead National Monument of America, Beatrice, Nebraska

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Chapter 1 - Purpose and Need

1.1 Introduction

Homestead National Monument of America (HOME), a unit of the National Park Service (NPS), is considering the construction of pedestrian trails and associated trail amenities within the historic site, to enhance the cultural landscape and recreational, educational, and interpretive opportunities for HOME's visitors. This project will include extensions and other modifications to the park's existing trail system.

This environmental assessment evaluates three alternatives: a No-Action alternative and two action alternatives. The No-Action alternative describes the current condition. Both action alternatives address the construction of the trails.

This Environmental Assessment has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that: 1) analyzes a reasonable range of alternatives to meet the project's purpose and needs, 2) evaluates potential impacts to cultural and natural resources, visitors and park management resources, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

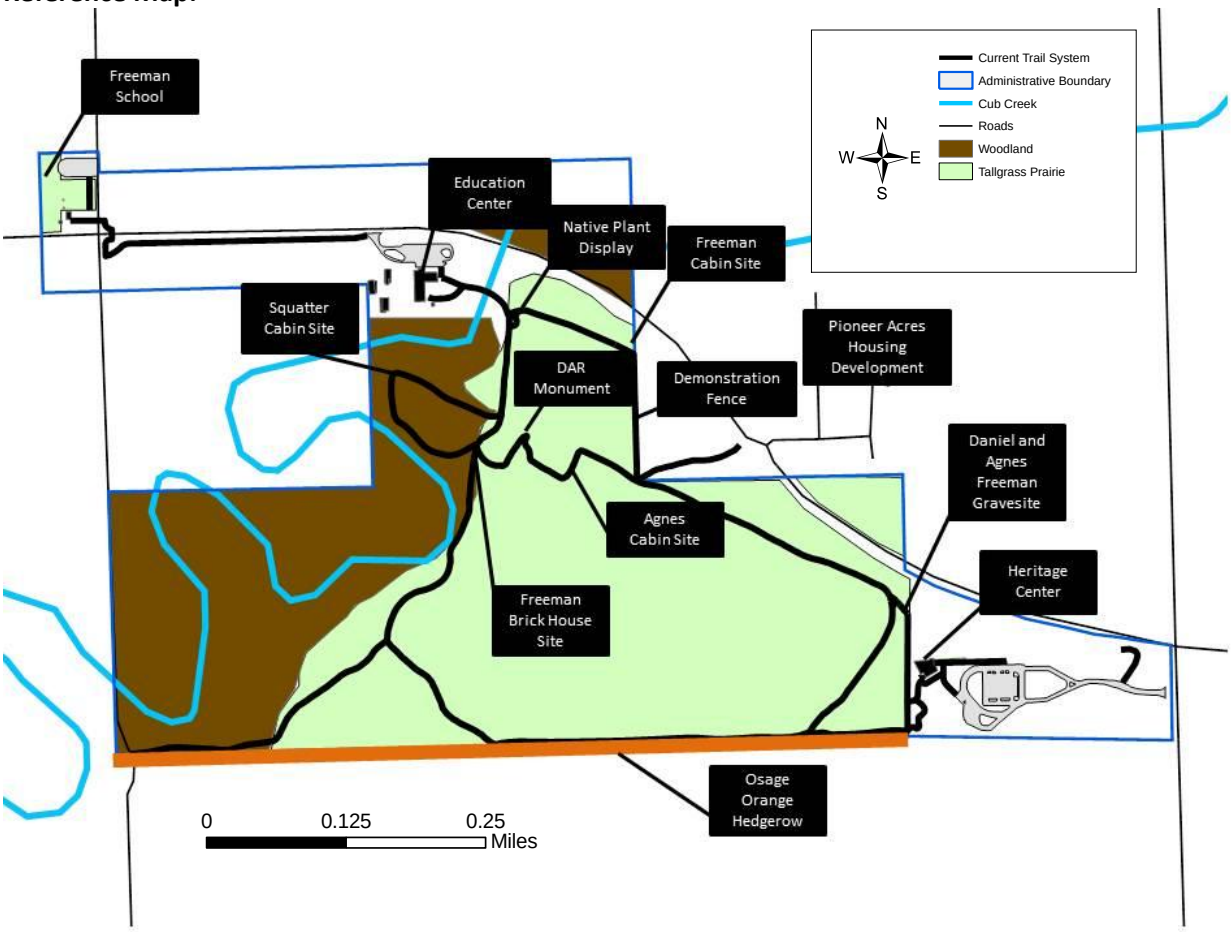
The document guiding the development of this project is the 2000 Cultural Landscape Report (CLR). The CLR states that in the development of the new "Freight Road Trail" the NPS is to:

> "Use archeological information, if available, to inform the trail design. Keep the proposed trail width, crown, adjacent plantings, and fences consistent with the conditions and character that was present during the earliest years of the period of significance. Since an intention of the original prairie restoration was to provide a representation of the early pioneer landscape, adopt a similar attitude in developing this trail through the prairie. Determine the trail width based on the width of the original two-track wagon road. Avoid clearing a wide right-of-way adjacent to the trail, and allow prairie vegetation to grow to the trail edge. If no archeological evidence is available to confirm the historic freight road width, maintain the trail at its current width." (National Park Service, 2000)

HOME is a monument to the Homestead Act of 1862. In March 1936, Congress established HOME under the stewardship of the NPS to "*retain for posterity a proper memorial emblematical of the hardships and the pioneer life through which the early settlers passed in the settlement, cultivation and civilization of the Great West.*" (National Park Service, 1999)

The park commemorates the Homestead Act of 1862 and its effects upon the settlement of the West as well as advancements in agricultural technology. Homestead's purpose is to commemorate the peoples whose lives were altered by the Homestead Act by interpreting the history of the country resulting in and from the Homestead Act of 1862. Included is the function of preserving literature, agricultural implements, and a museum to interpret settlement, cultivation, and development of the West.

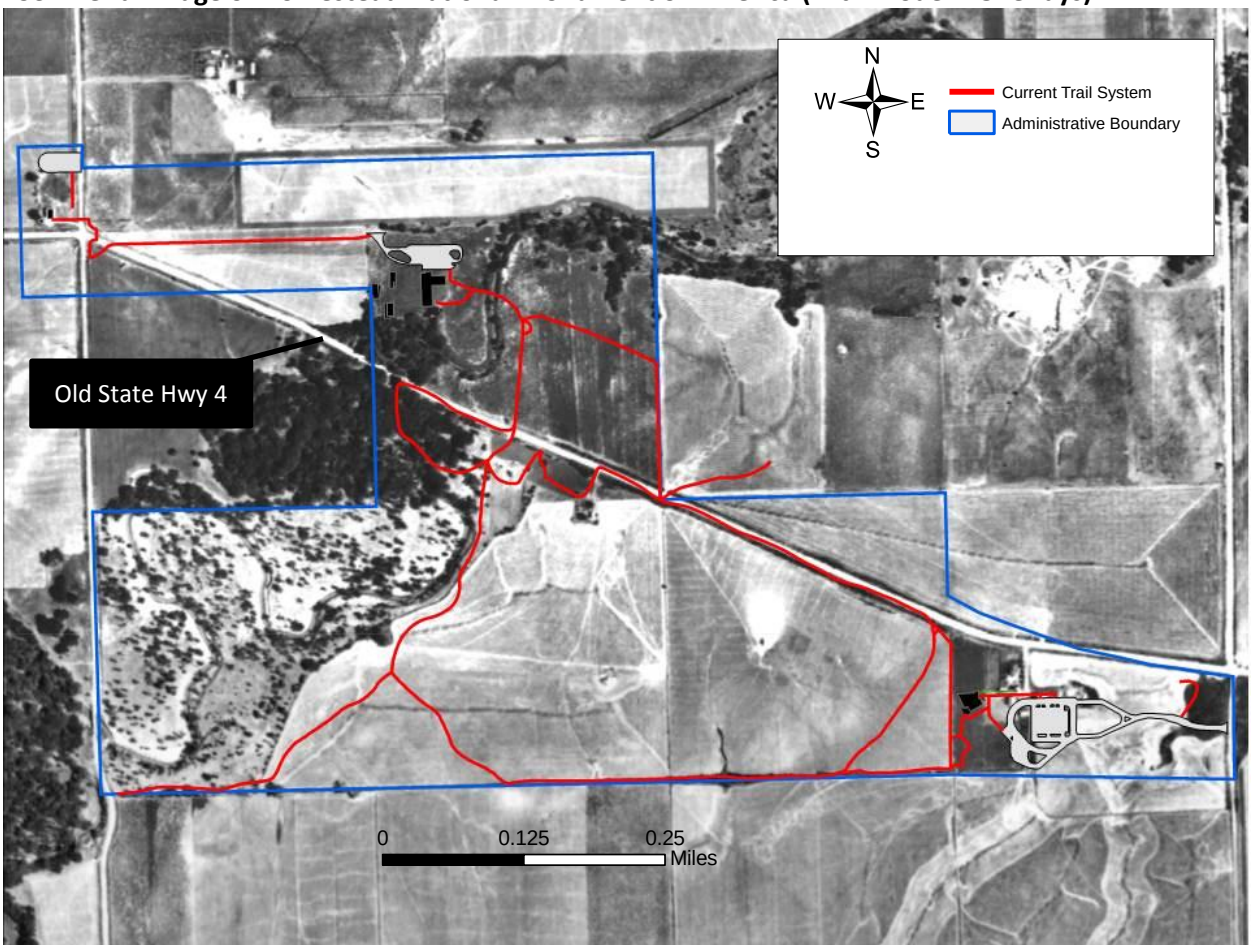
Reference Map:



The park contains Daniel Freeman's "T" shaped homestead claim with small parcels containing the Freeman School site and land purchased for the Heritage Center Complex. Daniel Freeman's homestead claim was chosen as the location for the monument to all of the impacts that the Homestead Act of 1862 had on the world because he is recognized as the first homesteader in the United States of America. He filed his application at the stroke of midnight on January 1, 1863 right as the Homestead Act went into effect.

From the time when the Freeman Family occupied the land the main features still remaining are the Osage orange hedgerow, which demarcates the southern boundary of the monument, the large cottonwood trees that were present along the Old State Highway 4 and the trace of the old State Highway 4 which is also known as the "old freight road." The 1906 plat map shows State Highway 4 in the same location until 1954 when the road was moved north to its present location and paved. Evidence of the graveled highway right-of-way is still present in the park with both drainage ditches still visible. See map on page 4.

1937 Aerial Image of Homestead National Monument of America (with Modern Overlays).



The average number of park visitors for the last ten years has been 65,412, since 2007 when the Heritage Center opened the average has been 76,183 (National Park Service, 2013). Visitation is primarily during the summer months with dramatic increases during special programs; a VSP Visitor study in 2009 sampled 254 visitors and found that 57% of the visitors are from Nebraska and the rest represented 38 other states. Forty-three percent of the visitors used the walking hiking trails (Papadogiannaki, Holmes, Blotkamp, Morse, & Hollenhorst, 2010).

During public meetings for the General Management Planning process in 1998 and 1999 comments were received asking for more trails. The desire for additional trails was also brought up in the December 7, 2010 public scoping meeting where the proposal for the trail project was discussed.

Today, the vegetation of the park is roughly two-thirds reconstructed prairie and one-third woodland, the same general ratio of native prairie/woodland found by the original surveyors of the area. The Freeman School grounds (approximately 2.5 acres total size) contain a 0.75-acre remnant of untilled native prairie (Bolli, 2006).

The 1997 Long Range Interpretive Plan states that the trails "will give visitors some comprehension of the expanse of land that equaled a homestead. By physically moving across the land, visitors will experience the reality of human interaction with a specific environment." It goes on to say that the

"prairie in its seasonal changes, with corresponding wildlife, responds to all the senses: hearing, seeing, smelling, and touching something of the past, present and future. In this moment one can transcend the present physical experience to both the past and the future in this national park. This link between the physical and the emotional is often the most lasting impression for visitors." (National Park Service, 1997).

Early in the NPS history of Homestead National Monument of America trails were developed through the Freeman Homestead. These trails have gradually expanded during the years.

Information from the sign file (D66 Sign Plans at Homestead NM) in the monument's central files gives some insight to how the interpretation and location has changed through the years. Research did not however indicate the very earliest trails or signage. Throughout all of the years the gravesite of Daniel and Agnes Freeman and the Daughters of the American Revolution (D.A.R) Monument has been focal points on the trails.

The 1958 Sign Plan has waysides at the Freeman Brick House Site, Agnes (Suiter Freeman) Cabin Site, Squatter Cabin site, and Freeman Cabin Site.

The 1975 Sign Plan has waysides interpreting Cub Creek, native grasses, the Agnes Suiter Freeman House, the squatter cabin site, and Freeman School.

The 1987 Sign Plan has waysides interpreting Cub Creek, the Daniel Freeman claim and trails, native plants of the prairie, a prairie house, a prosperous homesteader, challenges of the prairie, water on the homestead, the squatter's cabin, and the Freeman School.

The current waysides were installed in 2008. They are titled Deep Roots in the Earth (Native Plant Display), Good Land to Live On (Squatter Cabin Site), Life without Trees (Woodland Loop), Working for Water (Cub Creek), Success from the Land (Brick House Site), Homesteaders Groceries (Upland Prairie Loop), Land: Commodity or Community (Upland Prairie Loop west of Heritage Center), Boundaries of Freedom (southeast corner of Freeman claim), Success was Only Natural (Upland Prairie Loop), Roads to Success (near Freeman Gravesite), Soil-from Rich to Ruin to Recovery (southeast corner of Farm Loop Trail), Simple Living (Freeman Cabin site), and Legacy of Change (west of footbridge).

The CLR directs the NPS to use archeological evidence to inform the design of the trail system. No archeological evidence has been found that directly confirms the early freight road's location or size. Research discussed below did point toward the historical condition of the roads in the area during the time the Freeman's resided on the homestead.

According to Kaplan (1992), it was March of 1865 when Daniel Freeman first brought his new bride Agnes to the homestead. The book relates a challenging crossing of the Big Blue River in Beatrice and then a trip following a deeply rutted trail the last four miles to the homestead. In Dobbs' History of Gage County, Nebraska, he describes the trail from Beatrice to Brownville in the late 1850's early 1860's as "…sixty miles of prairie, practically uninhabited; the road thither was little better than a wandering trail across prairie waste." (Dobbs, 1918)

A report detailing the history of highway development in Nebraska relates that the Nebraska Territory passed its first county road law in 1856. The law was amended in 1860 so the law stated that the roads were to be 66 feet wide and bridges at least 16 feet wide. The roads were to be maintained by the

county commissioners. Each male citizen between the ages of 21 and 60 were to give a poll-tax of two days labor to be expended upon the public roads (Koster, 1997). Even with the early passage of the territorial road laws, roads were not a priority until the early 1900's. In Gage County, Nebraska it was 1918 before roads and automobiles became reliable enough for rural mail delivery (Gage County History Book Committee, 1983).

1.2 Project Location

HOME is located in southeastern Nebraska (Gage County) just west of the city of Beatrice. The property consists of 212 acres including 100 acres of restored tallgrass prairie and 60 acres of hardwood forest. The park is dissected by Cub Creek throughout the west end of the property.

The entire project is located within the boundary of the monument.

1.3 Purpose and Need

The purpose of the proposed project is to enhance the park's cultural landscape by: realigning the walking trail within what is believed to be the historic corridor of the old freight road across the Freeman Family Homestead; emphasizing the role of this road in the life of the Freeman Family as they developed their Homestead Claim; and providing additional educational, informational, and recreational opportunities for park visitors as it relates to the old freight road.

The project will improve interpretation of the period and enhance the visitor experience. The realignment will direct visitors through a historic corridor so they literally walk in the footsteps of the homesteaders. By allowing visitors to literally walk in the footsteps of homesteaders they will better understand the role that a good transportation route played in homesteaders' lives and open new areas of the monument to visitors so they can better understand the cultural significance of the features of the monument.

1.4 Project Objectives

The proposed project has the following objectives:

a. Realign the trails with the old freight road (Old State Highway 4) to enhance visitor understanding about the importance of good transportation to homesteaders;
b. Provide a formal location on the prairie for interpretive and educational programming; and
c. To extend the length of the trails to increase opportunities for individual physical fitness while enjoying nature.

1.5 Scoping

Scoping is the process to identify the resources that may be affected by a project proposal, and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. The Monument conducted internal scoping with appropriate NPS staff to identify potential issues, impact topics, and alternative ways to meet project needs. The Monument also conducted external scoping with the public and interested/affected groups.

Scoping is discussed in more detail within Chapter 5: Consultation and Coordination.

1.6 Impact Topics

NPS policy requires that all proposed projects be screened for potential impacts against a list of natural and cultural resource categories. Park management used an interdisciplinary review process to determine which resources could be affected by this project.

NEPA requires that agencies consider whether a number of different possible issues require a detailed analysis as impact topics. Impact topics are resources of concern that could be affected, either beneficially or adversely, by implementing any of the proposed alternatives. Impact topics were identified by the park's interdisciplinary review during the completion of the Environmental Screening Form.

Identification of topics to be analyzed:

- Soils:
  Soils can be adversely affected during trail construction as well by heavy trail usage as a result of erosion. Therefore, impacts to soils are analyzed in this Environmental Assessment (EA).
- Vegetation:
  Native vegetation of the monument consists of about 1/3 woodland and 2/3 restored tallgrass prairie. The vegetation is managed to give the visitors a glimpse of the vegetation that the early settlers to southeast Nebraska encountered. The prairie restoration began in 1939 and is recognized as the second oldest restored prairie in the Nation. The woodland in the north forty is classified as a lowland bur oak woodland, a rare woodland community in Nebraska. Trail construction and usage will have impacts on vegetation, and has the potential to introduce exotic invasive species. As a result, this EA will analyze the impacts of the proposed trail realignment on vegetation and how it relates to the introduction and spread of exotic invasive species.
- Visitor Use and Experience:
  The 1916 Organic Act directs the NPS to provide for public enjoyment of the scenery, wildlife and natural and historic resources of national parks "in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." The removal and realignment of recreational trails to better interpret the cultural landscape will be consistent with the Monument's purpose and with the recommendations of Cultural Landscape Report. Care will be taken to ensure that the views from the Heritage Center and the trails are preserved to give visitors an idea of what the first homesteaders would have encountered. By protecting the remaining important viewsheds as identified in Exhibit 23 of the CLR. HOME will ensure that visitors are able to immerse themselves in the land and have the opportunity to see what the Freeman's may have seen when they were arriving and developing their homestead claim.

  Realigning the walking trail is a perceived beneficial impact to visitor use and experience. To determine this impact visitor use and experience will be retained for further analysis.
- Cultural Resources (Cultural Landscape, & Archeology):
  Section 106 of the National Historic Preservation Act of 1966, as amended, provides the framework for Federal review and protection of cultural resources, and ensures that they are considered during Federal project planning and execution. The monument is on the Cultural Landscape Inventory and contains a total of 10 features that have been included on the List of Classified Structures, including the Palmer-Epard Cabin, Freeman School, Freeman School Storage Shed, Freeman School Girls Privy, Freeman School Boys Privy, Freeman School Pump, Freeman (Daniel and Agnes), Footstones, DAR Monument, Freeman Family Grave Marker, and the Freeman School Playground Equipment Pole. Archeological surveys within the moment have

identified 6 sites. Trail placement and construction can adversely affect cultural resources. As a result of trail realignment there are potential impacts and the potential to discover unknown locations of cultural resources, this topic will be carried forward for additional analysis.

Impact topics not retained:
The topics listed below were dismissed from further analysis as a result of being identified during the internal scoping process as not affecting the environment as it is not being affected by implementing any of the proposed alternatives.

- Environmental Justice:
  Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs or policies on minorities and low-income populations and communities. The plans evaluated in this EA would not adversely affect socially or economically disadvantaged populations.
- Prime and Unique Farmlands:
  Four of the soil types within the project area are listed as "Prime Farmland". They are Chase Silty Clay Loam 0 to 1% Slope, Judson Silt Loam, 2 to 5% Slope, Kennebec Silt Loam, 0 to 1% Slope, and Nodaway Silt Loam, 0 to 2% Slope (Scheinost et al. 2003). The land was restored from farmland to its native vegetation starting in 1939. This project is not proposing to convert any prime farmland from agriculture production to another use. There will be no indirect or direct impacts to the neighbors' prime farmland. The intent of the prime and unique farmland consideration is the concern for taking productive farmland out of production permanently. Because this project is not taking prime farmland out of production and because in theory it still could be used for production agriculture, Prime and Unique Farmlands will not be included for further analysis.
- Air Quality:
  The Federal 1970 Clean Air Act stipulates that Federal agencies have an affirmative responsibility to protect a park's air quality from adverse air pollution impacts. The monument is located within a Class II air quality area. This is less stringent and pristine as compared to a Class I area. Trail removal and construction impacts on air quality would be limited to short term effects including the temporary introduction of particulates into the environment. As a result, air quality will not be included for further analysis.
- Wildlife:
  The long-term goal of the monument's natural resource management program is to maintain wildlife populations with healthy plant communities. There are resident populations of various species of reptiles, amphibians, birds, mammals, and invertebrates. No foreseeable impacts will occur to wildlife, as a result of the trails realignment. As a result, this topic will not be included for additional analysis.
- Special Status Species:
  Analysis of the potential impacts on special status species (federal or state endangered, threatened, or candidate species; or species of concern) is required by the Endangered Species Act, NPS Management Policies, the National Environmental Policy Act, and other regulations. Monitoring and inventory work conducted by the Heartland Inventory and Monitoring Network and consultation with the Nebraska Field Office of the Fish and Wildlife Service (see Appendix A) has confirmed that no special status species inhabit the monument. Special status species will not be retained for further analysis.

- Socioeconomic:
  The National Environmental Policy Act requirements include an analysis of social and economic impacts caused by federal actions. The economics of the nearby community of Beatrice would not be affected by the monument's proposed trail realignment plan.
- Park Operations:
  The realigning of the trails is not expected to alter the amount of visitation so no impacts to visitor services are expected. The trail mileage of all the alternatives is similar to the current total trail length. Therefore, no impacts to trail maintenance operations are expected. As a result no changes are expected to occur from the implementation of any action alternatives, so this topic is dismissed from further analysis.
- Floodplains:
  Presidential Executive Order 11988 mandates floodplain management. To implement the Executive Order the NPS has developed Procedural Manual 77-2: Floodplain Management. Within that manual it identifies excepted actions. This project falls under an excepted action. The placement of foot trails in the floodplain that are considered non-high hazard areas, provided that the impacts of the facilities on floodplain values are minimized, is an excepted action. The monument contains 90 acres of floodplain adjacent to Cub Creek. With the exception of the new trail proposed along the southern boundary and the removal of the trail that currently takes visitors to the hedgerow in the middle forty all of the proposed changes to the trail system are in the 100 year flood plain. The construction or presence of trails within the floodplain at HOME will not increase the risk of flood loss, will not increase human safety concerns and will not impair the natural and beneficial values served by floodplains. The impacts to the Cub Creek floodplain are the same for all of the proposed alternatives and therefore this topic is dismissed from further analysis.
- Wetlands:
  The monument contains 0.9 acres (3642 meters squared) of wetlands adjacent to Cub Creek. Action alternatives within this EA proposed the removal of a boardwalk from a wetland. Presidential Executive Order 11990 mandates protection of wetlands. This project fall under the excepted activities listed in the Directors Order 77-1 Procedural Manual (National Park Service, 2012), the manual that defines how the Executive Order is to be implemented on NPS lands. The project has the potential to have short term impacts on 0.01 acres (40 meters squared) of wetland. Scenic overlooks and foot/bike trails or boardwalks are excepted as long as the acreage disturbed is less than 0.1 acres (404 meters squared) in size. As a result, wetlands will not be analyzed in this EA.

Chapter 2 – Alternatives

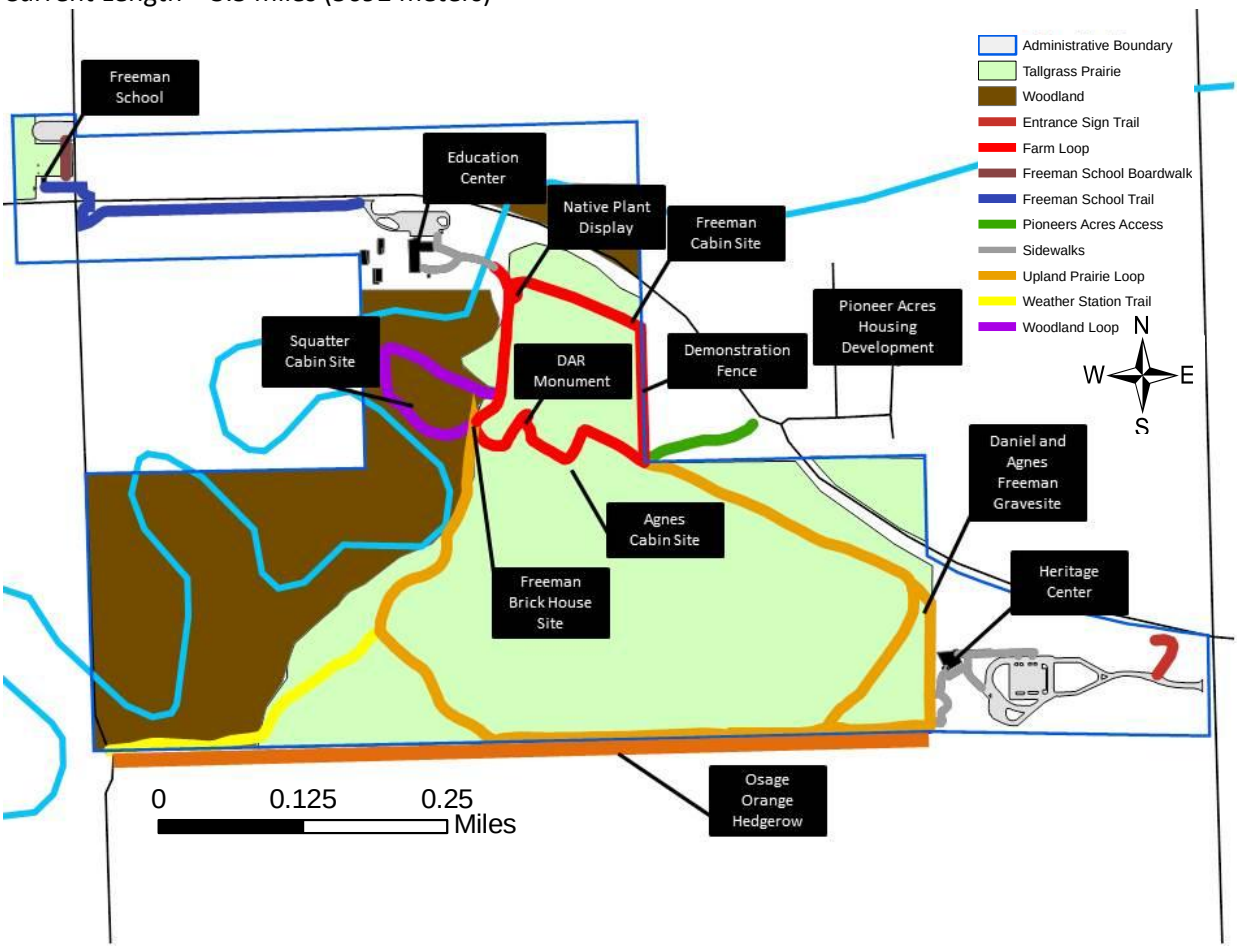
2.1 Alternatives Considered and Analyzed in this Environmental Assessment.

NEPA requires federal agencies conduct a careful, complete, and analytical study of the impacts resulting from proposals that have the potential to affect the environment, and to consider alternatives to those proposals, well before any decisions are made. This section describes the three alternatives considered, including the No-Action Alternative. Following a description of the alternatives selected for analysis is a discussion of the environmentally preferable alternative and preferred alternative.

Alternative 1: No Action

Trails would continue to be maintained as they are presently. The length of the trail would remain at their present distance.

Current Length = 3.5 miles (5692 meters)



Existing Trail System Overview:
The current trail system at Homestead connects the Heritage Center, Education Center and Freeman School. The trails allow visitors to visit the Squatter Cabin Site, D.A.R. Monument, Freeman Cabin and Brick House Sites, Agnes Cabin Site, Daniel and Agnes Freeman's Gravesite and the Osage Orange Hedgerow. The current outdoor interpretive waysides signs were installed in 2008. They educate the public about a wide range of topics related to the 1862 Homestead Act and natural and cultural resources of the monument.

The current trail system does not meet the purpose of this project because there is no trail that follows the route of the "Old State Hwy 4" through the monument as it would have when the Freeman Family was living on the property. The current trail system does not have a formal destination area for visitors to rest and for interpretive programs to be presented.

The walking surface of the trails are five feet wide and an additional two and one half feet are mowed on each side of the walking surface for a total width of ten feet. The trails are composed of a mixture of surfaces including crushed limestone, buffalo grass, mixed grass and forbs and hard packed soil. In four areas the trails have been built up and culverts have been installed to make the trails accessible in wet periods. Located just west of Agnes Cabin Site a boardwalk was installed through a small 0.15 acre (623 meter squared) wetland. The trails are maintained with weekly mowing through the growing season.

Description of Existing Trails:
Entrance Sign Trail: This 0.05 mile (79 meter) trail allows visitors access the entrance sign on the monument's east side. This allows them the opportunity to take pictures of the sign. It starts at a small pull off on the Heritage Center entrance road and ends at the entrance sign. The trail is a mowed path through a low diversity planting of native prairie vegetation.

Farm Loop Trail: This 0.71 mile (1141 meter) trail starts at the Education Center. It then takes visitors across to the footbridge to a wayside by the Native Plant Display titled "Deep Roots in the Earth". The trail continues east to the Freeman Cabin Site where a wayside titled "Simple Living" marks the site of the first cabin that Daniel Freeman built on his homestead. Then the trail goes south along an interpretive fence demonstrating the different fencing options that homesteaders of the late 1800's and early 1900's employed. At the south end of the demonstration fence a NPS survey marker locates intersection of the north, middle and east forties of the Freeman Homestead Claim. From there the loop follows the trace of the Old State Highway 4 northwest to a group of cottonwood trees that came up along the old highway and provided shade for Agnes Suiter Freeman's Cabin. The trail turns south at that point and goes to the approximate location of Agnes Cabin Site. At that location a wayside has been installed titled "Soil-From Rick to Ruin to Recovery". From there the trail turns northwest where a boardwalk crosses a small wetland. The trail then heads north so visitors can see the time capsule and D.A.R. Monument and which is still in its original 1925 location. The trail then heads back to the south to the Freeman Brick House site where the Woodland Loop Trail can be accessed. The Farm Loop Trail goes north past the second access point for the Woodland Trail to the native plant display and the footbridge that takes you back to the Education Center. The trail surface is a mixture of both buffalo grass and crushed limestone.

Freeman School Trail: This 0.33 miles (530 meters) trail takes visitors from the Education Center parking lot to the Freeman School. The trail is located in the south ditch of the Highway 4. It is a simple mowed grass trail. At County Road SW89th there are crosswalks painted on Highway 4 and SW89th leading you

to the historic entrance road for the school. On the school grounds there are waysides talking about the Freeman School and late 1800 school life in general.

Pioneer Acres Access: This 0.11 mile (172 meter) trail connects Pioneer Acres subdivision to Homestead's trail system. The trail starts directly south of the entrance road for Pioneer Acres. There is no signage or cross walk to warn drivers on Nebraska State Highway 4 of the potential for pedestrians crossing the highway. The trail is located in land owned by the Nebraska State Department of Roads. It is a simple mowed path

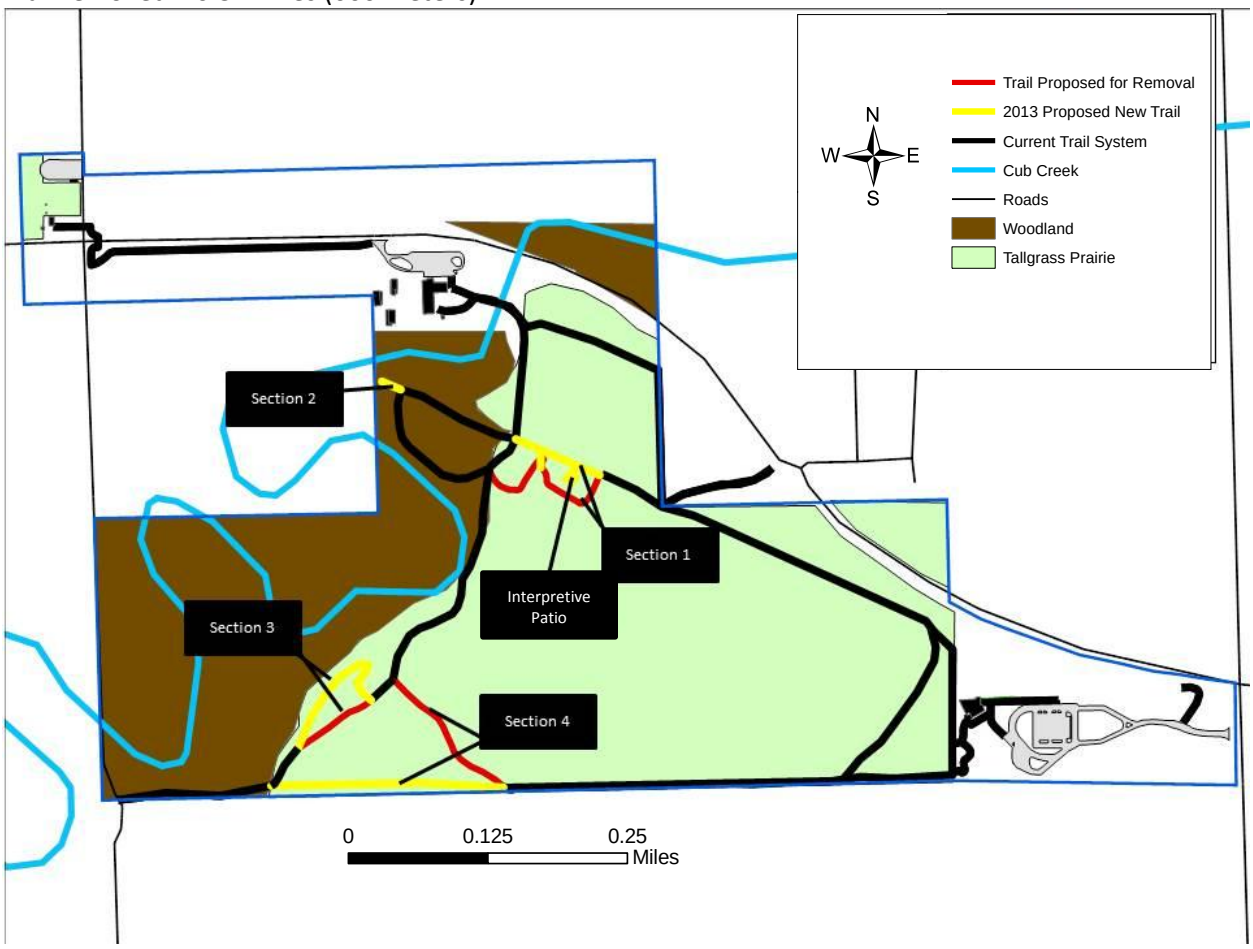
Upland Prairie Loop Trail: The 1.34 mile (2185 meter) trail starts at the Heritage Center. From the Heritage Center the trail takes you south along a barbed wire display fence to a spot where immediately east is the Palmer-Epard Cabin and to the west visitors enter the Freeman Homestead Claim on its southeast corner. At that location is a wayside titled "Boundaries of Freedom". The trail then goes west along the historic Osage Orange Hedgerow planted by Daniel Freeman. Approximately 0.09 miles (150 meters) west there is a trail that takes visitors north to a wayside titled "Success was Only Natural" and then on to the Daniel and Agnes Freeman's Gravesite. At that point it connects back with the trail that is just east of the barbwire display fence taking visitors back to the Heritage Center. That short loop of the Upland Prairie Loop Trail starting and stopping at the Heritage Center is 0.38 miles (615 meters) long. If instead of doing the short loop visitors continue to travel west along the hedgerow they will soon come to a wayside titled "Land: Commodity or Community" and "Where did Homesteaders Get Groceries?" After following the hedgerow for 0.40 miles (640 meters) the trail leaves the hedgerow and heads northwest down a hill to the riparian woodland and the Freeman Brick House Site. If visitors want to continue the Upland Prairie Loop they can access the Farm Loop Trail and go past the D.A.R. Monument back to the point where the north, middle and east forties meet at the survey marker. At that point visitors will be using the trail following Old State Highway 4 to travel to the Freeman's Gravesite. Right before they get to the gravesite there is a wayside titled "Roads to Success". At the gravesite visitors would exit the Freeman Homestead and follow the barbed wire display fence back to the Heritage Center.

Weather Station Trail: This 0.29 mile (460 meter) trail connects the trail system to a locked gate on the southwest corner of the property. It is a simple mowed path. The trail was originally created to access a weather station. That weather station was removed over 15 years ago. The trail has no interpretive signage. Once visitors reach the woodland the trail follows the Osage Orange Hedgerow along the southern boundary to the west boundary.

Woodland Loop Trail: The 0.25 mile (408 meter) trail starts south of the Native Plant Display turning northwest off of the Farm Loop Trail. The trail is hard packed soil. Once the trail heads northwest from the Farm Loop Trail visitors are traveling on the trace of the old state highway. The ditches from when it was a highway are very evident on either side of the trail. The first site encountered is the Squatter's Cabin Site at that location is a wayside titled "Good Land to Live On". From there it heads south away from the old highway where there are waysides titled "Life Without Trees" and "Working for Water" before it joins the Farm Loop Trail at the Freeman Brick House Site where there is a wayside titled "Success from the Land".

Alternative 2: HOME Diamond Alternative (Preferred Alternative)

If implemented total trail length = 3.62 miles (5822 meters)
New trail = 0.45 miles (730 meters)
Trail removed = 0.37 miles (600 meters)



With this Alternative the trail is aligned along the historic road bed, the current trail configuration of the Farm Loop Trail leading to the Freeman Cabin Site is maintained and along the park's southern boundary the Upland Prairie Loop Trail is moved to follow the entire length of the Osage orange hedgerow. This alternative modifies the Weather Station Trail taking visitors to a significant natural feature; a near state record cottonwood tree. This alternative adds a spur trail to the DAR Monument and Time Capsule and a boardwalk from the new Freight Road Trail to an interpretive patio with interpretive signage and seating.

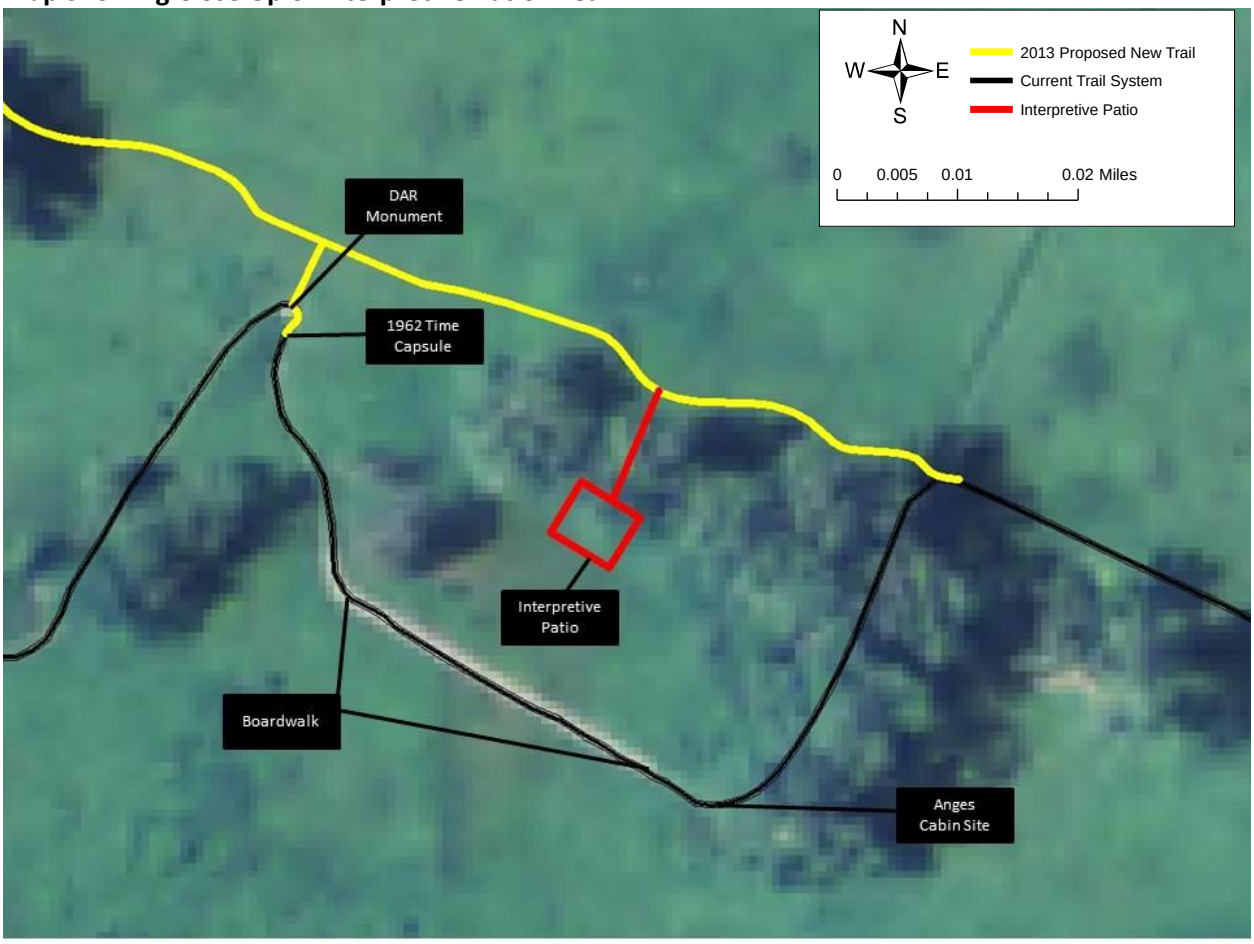
This alternative enhances the cultural landscape by constructing a trail on the former route of the old State Highway 4 and by creating a trail along the entire length of the historic Osage orange hedgerow that demarcates the southern boundary of the Freeman Homestead Claim. Building the interpretive patio gives visitors and staff a formal destination to present programs and to rest and reflect on the significance of the Homestead Act and how the Freeman Family used the Homestead they were given to carve a life out of the land. The overall length of the trails would increase with this alternative providing more opprotunity for fitness. Trails continue to be configured in such a way that visitors have several options to walk different length loops without doubling back on the same trail.

Section 1: This section will move the southern part of the current Farm Loop Trail north so it follows the trace of Old State Highway 4. Moving the trail will make it necessary to move the wayside titled "Soil-From Rich to Ruin to Recovery". The boardwalk that goes through the small wetland just west of that wayside will need to be removed along with the rest of the trail that goes to the Freeman Brick House Site. To access the D.A.R. Monument and nearby time capsule a short spur will need to be constructed connecting the new trail to those locations. It is on this section of trail that the interpretive patio will be located.

The new trail located on the old road trace will be constructed by first mowing the proposed walking surface with a five foot wide shedder attached to the front of a skid-steer tracked Bobcat. The area will then be tilled with the same skid-steer loader once the area has been tilled crushed limestone will be applied to a depth of four inches and then compacted.

Removal of the existing trail will be done by tilling and then replanting the trail with locally harvested native plants in late fall.

Map Showing Close Up of Interpretive Patio Area



The raised boardwalk leading to the interpretive patio will be five feet (5') wide, sixty-five feet (65') long and approximately twelve inches (12") high. The boardwalk will have a rail built at the edges to deter

visitors from exiting off the sides. The board walk will need to cross the old state highway 4 road ditches.

The interpretive patio will be approximately 1050 square feet and have benches build into the rail system along the edges. The boardwalk will be supported by four by six (4”X6”) posts every eight feet (8’) and the interpretive patio will be supported by six by six (6”X6”) posts, all posts will be buried to three feet (3’) deep (the average frost depth in the region) and filled with packed limestone chip.

The raised boardwalk and interpretive patio will be constructed with a Trex type recycled plastic material. This material has been used within other park projects, meets greening protocol, has a longer usable life span than wood materials and will give a consistent appearance throughout the monument. Interpretive waysides will be located on the interpretive patio. The entire project will be built to local and federal building code specifications.

Section 2: This section will be created from the Squatter Cabin Site to the edge of Cub Creek following the trace of Old State Highway 4. The construction of this short spur will give the monument the opportunity to visually connect the Freeman Homestead claim with the Freeman School. When the field northwest of the site is planted with corn the view to the school will be impair. This short spur further emphasizes the route that Gage County residence used as they traveled between Beatrice and Plymouth and points in between.

This section will be constructed by mowing the path in the same manner as the rest of the Woodland Loop Trail. It will be hard packed earth.

Section 3: This section will move a section of the Weather Station Trail to the west following the location of a fire break that is installed along the woodland when that unit is burned. Moving that section of trail will take visitors near a massive cottonwood tree that is one of the largest in the state of Nebraska. The path will be located outside of the drip-line of the woodland trees.

This 0.14 mile (227 meters) section will be a simple mowed path. The trail that will be removed is 0.07 mile (117 meters) long. Because of the low use of this trail it is planned to let the trail recover naturally. If it appears that the vegetation is not recovering after a year the trail will be tilled and restored with locally harvested seed.

Section 4: This section of trail will be created along the southern boundary connecting the Weather Station Trail and the Upland Loop Trail making a longer Upland Prairie Loop. The new trail is 0.20 miles (320 meters) long. The new trail along the hedgerow will be constructed by first mowing the proposed walking surface with a five foot wide shedder attached to the front of a skid-steer tracked Bobcat. The area will be tilled with the same skid-steer loader and then crushed limestone will be applied to a depth of four inches and compacted. If warranted water bars will be install to protect the trail from erosion.

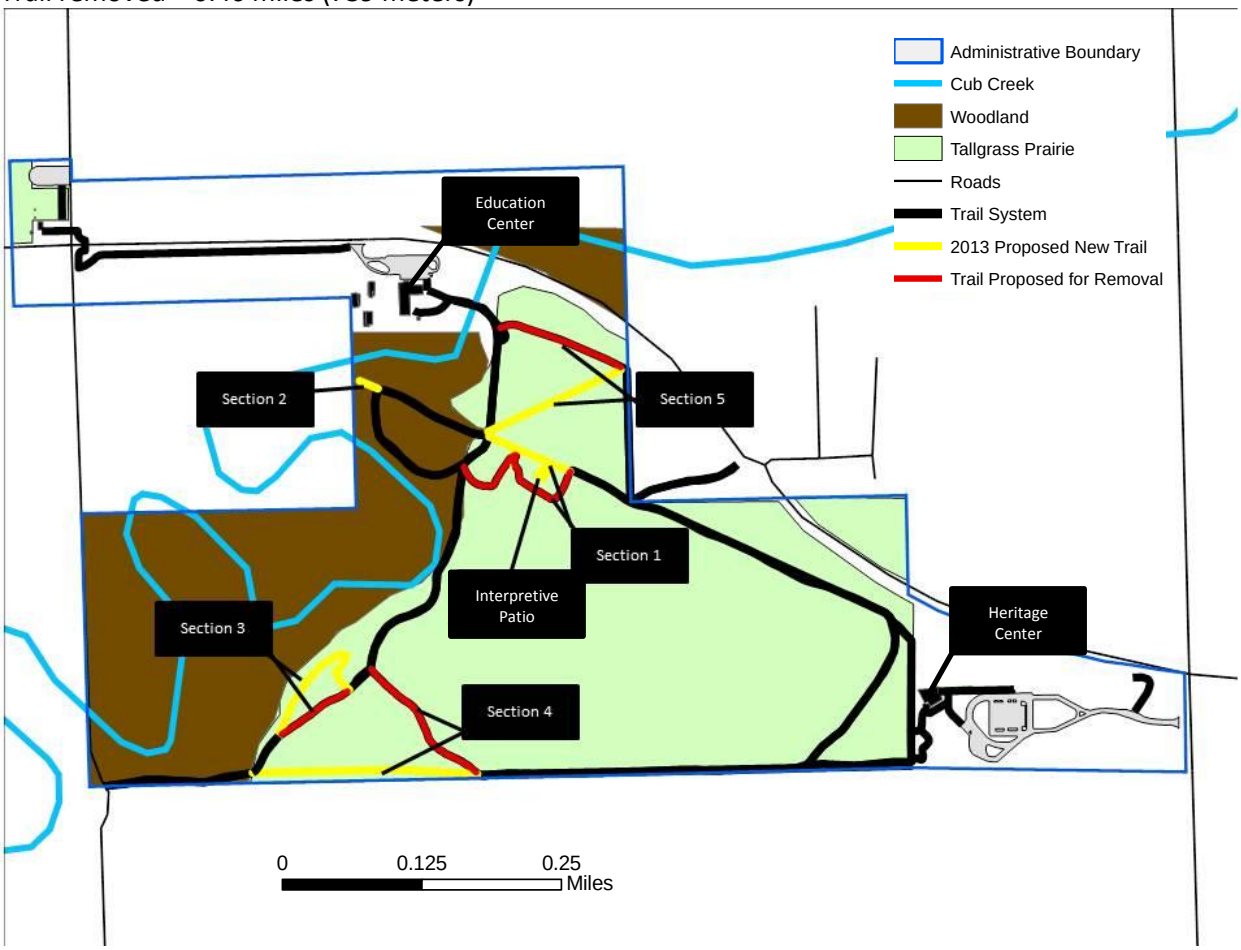
The trail to be removed is constructed of chipped limestone. Due to its incline, the trail has several four inch by four inch (4"X4") treated lumber water bars installed in it. To restore this section of trail it will be necessary to remove the chipped limestone and water bars followed by tilling the areas to prepare it for planting. It will be planted with locally harvested native seed at a rate of 0.5 pounds of pure live seed per one thousand square feet. Special care will need to be taken to ensure that water is not funneled toward the retired trail. This section will need to be monitored to ensure that erosion is not occurring. If erosion is occurring it will need to be mitigated at once.

Alternative 3: HOME Triangle Alternative

This Alternative is the same as the Diamond Alternative (Alternative 2) except the portion of the Farm Loop Trail is removed that connect the Native Plant Display to the Freeman Cabin Site and a new trail is created that connects the Freeman Cabin Site and the Freeman Brick House Site. This Alternative was created based on suggestions from the CLR.

This alternative enhances the cultural landscape by constructing a trail on the former route of the "Old State Highway 4" and by creating a trail along the entire length of the historic Osage orange hedgerow that demarcates the southern boundary of the Freeman Homestead Claim. Building the interpretive patio gives the visitors and staff a formal destination to present programs and to rest and reflect on the significance of the Homestead Act and how the Freeman Family used the homestead they were given to carve a life out of the land. The overall length of the trails would increase with this alternative providing more opprotunity for fitness. Trails continue to be configured in such a way that visitors have several options to walk different length loops without doubling back on the same trail. Creating Section 5 with this alternative further emphasizes the historic circulation pattern of the Freeman Family as called for in the CLR.

As shown= 3.66 miles (5901 meters)
New trail = 0.59 miles (948 meters)
Trail removed = 0.46 miles (739 meters)



Section 5: This option creates a 10 foot wide trail from the Brick House Site to the Freeman Cabin Site. The new trail is 0.13 miles (217 meters) long. The trail will be constructed by first mowing the proposed walking surface with a five foot wide shedder attached to the front of a skid-steer tracked Bobcat. The area will be tilled with the same skid-steer loader and then crushed limestone will be applied to a depth of four inches and then compacted.

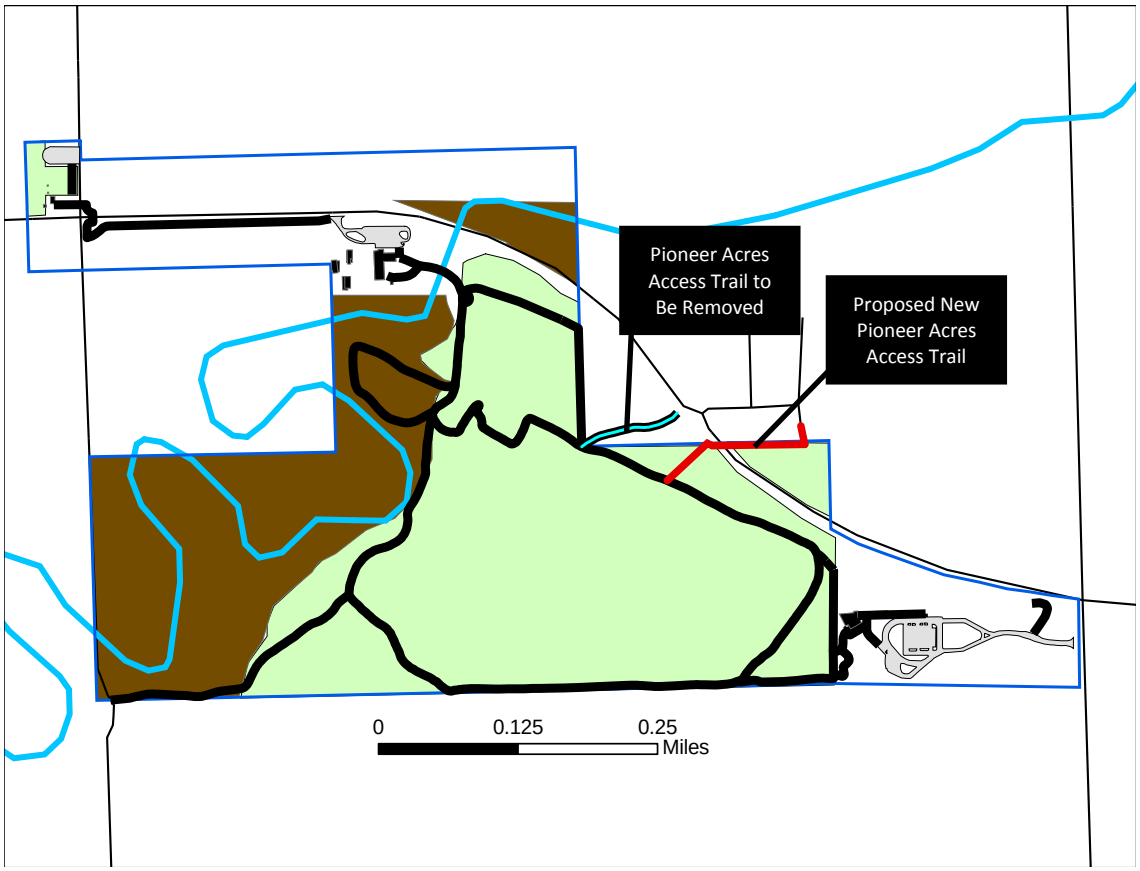
The trail that will be removed will be tilled and then planted with 0.5 pounds of pure live seed per one thousand square feet.

2.2 Alternatives Considered but Dismissed from Further Analysis

Addition of Pioneer Acres Reroute

This Alternative was brought to the Pioneer Acres Homeowners Association and the group strongly opposed this change to the trail system. Reasons for opposition were mainly related to not wanting the trail in their backyard. The landowner where the trail would have connected to the commonly owned roads in the development was also very opposed to the idea of having the trail cross his land. It was also discussed that people would not want to walk up the hill to access the trail.

New Trail = 292 meters
Trail Removed = 178 meters



This Alternative was developed to address park staff concerns about Pioneer Acres residents having to traverse a fairly steep road bank as the Pioneer Acres Access Trail leaves State Highway 4. The access trail also gets somewhat marshy during wet periods. The Alternative would have moved the access trail to land owned by the NPS. It would have started at the northeast corner of the east forty of the Freeman Homestead Claim. From there it would have followed the north fence of the east forty west to the highway. It would have crossed the highway at that point. A culvert/walking bridge would have been installed to help visitors cross the road ditch and then the trail would have followed an old access road that was created when the new highway was being built in the 1950's and connects with the current trail system.

2.3 Environmentally Preferable Alternative

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alterative is the alternative "…that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources." The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative.

Alternative 2 is the environmentally preferable alternative. The HOME Diamond Alternative will cause the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources.

Preferred Alternative:
The HOME Diamond Alternative is the preferred alternative because it meets the purpose and need for this project while doing the least harm to the environment. It was chosen over the Triangle Alternative because that alternative raised concerns regarding the amount of vegetation that was going to be disturbed, the further fragmentation of the restored tallgrass prairie, the impact that it would cause to visitors using the trail system for fitness purposes by increasing the amount of backtracking that would be needed to walk the Farm Loop Trail and the impacts that it would cause to staff leading groups on prairie walks. Usually when working with a large group rangers take the groups in opposite directions after crossing the Cub Creek Bridge so they do not interfere with each other.

Chapter 3 – Affected Environmental

This chapter summarizes relevant resource components of the existing environment directly in the project area. It describes environmental components that would be affected by the alternatives, if they were implemented, and provides a baseline against which environmental consequences of the trails realignment plan can be compared. Additional material, specifically related to impacts and effects of the alternatives, is included in Chapter 4, Environmental Consequences.

Identification of topics to be analyzed:
The following is a list of resources retained for further analysis within this Environmental Assessment:

3.1 Soils

Homestead National Monument of America and the surrounding area lie within the glaciated Drift Hill Region of southeastern Nebraska. The topography of the park has an extreme relief of 70 feet. The average elevation is approximately 1,260 feet with the highest point rising to 1,320 feet (Scheinost, Labenz, & Willoughby, 2003) (Graham, 2011).

Within the boundaries of the monument a Soil Survey completed by the Natural Resource Conservation Service identified nine different soil units. Six of the units are within this project area. Below is a description of those soils as found in the Gage County Soil Survey followed by a map, this list also serves as the key for the map (Scheinost, Labenz, & Willoughby, 2003).

2076 – Chase Silty Clay Loam, 0 to 1 percent slopes, rarely flooded. The major component (85%) of this unit is the Chase Series. The Chase Series consist of very deep soils that formed in alluvium. These soils are on flood plains. Permeability is very slow.

4106-Judson Silt Loam, 2 to 5 percent slopes. The major component (90%) of this unit is the Judson Series. The Judson Series consists of very deep, well drained soils that formed in silty colluvium. These soils are on foot slopes and alluvial fans.

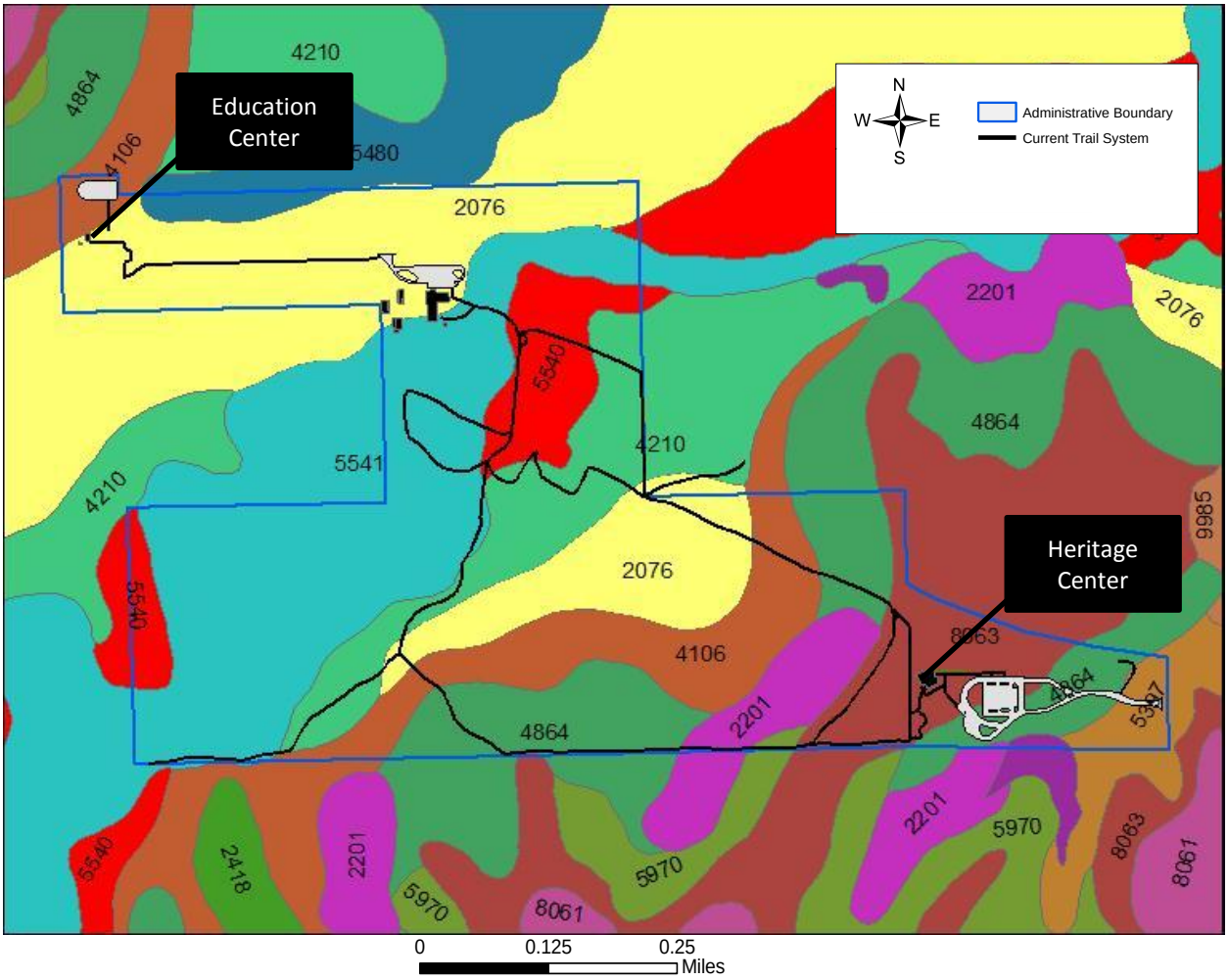
4210-Kennebec Silt Loam, 0-1 percent slopes, rarely flooded, cool. The major component (85%) of this unit is Kennebec Series. The Kennebec Series consists of deep, moderately well drained soils that formed in alluvium. These soils are on flood plains.

4864-Malmo-Pawnee Complex, 6-12 percent slopes. The major components of this unit are Malmo (60%) and Pawnee (30%). The Malmo Series consists of very deep, moderately well drained soils on uplands. These soils formed in weathered glacial till. Permeability is very slow. The Pawnee Series consists of very deep, moderately well drained soils that formed in glacial till. These soils are in the uplands. Permeability is slow or very slow. This soil unit has a severe risk of water erosion. When Malmo-Pawnee Complex soils are farmed the erosion can be controlled by contour farming, terraces and conservation tillage.

5540-Nodaway Silt Loam, 0 to 2 percent slopes, occasionally flooded. The major component (90%) of this unit is the Nodaway Series. The Nodaway Series consists of very deep, moderately well drained soils that formed in alluvium. These soils are on flood plains.

5541-Nodaway Silt Loam, 0 to 2 percent slopes, frequently flooded. The major component (85%) of this unit is the Nodaway Series. The Nodaway Series consists of very deep, moderately well drained soils that formed in alluvium. These soils are on flood plains.

Soil Map from (Scheinost, Labenz, & Willoughby, 2003) **Use numbers to find description above.**



3.2 Vegetation

The vegetation of the monument is composed of both tallgrass prairie and lowland bur oak woodland with the addition of a few large cottonwoods and an Osage orange hedgerow that has cultural significance.

The tallgrass prairie restoration started in 1939; it is considered the second oldest restored tallgrass prairie in the United States of America. Nationwide less than 5% of the original tallgrass prairie present before the Homestead Act was passed remains. The 100 acres restored prairie at the park gives visitors a glimpse of what early homesteaders would have encountered. The major tallgrasses within the prairie are big bluestem, Indian grass, switch grass, and little bluestem. In the prairie a varieties of forbs are also found including various sunflower and goldenrod species, coneflowers, compass plant, ironweed, and leadplant. In addition, there are several dogwood, wild plum, and smooth sumac thickets, especially in areas of slightly higher soil moisture.

Currently the most troublesome exotic species in the restored prairie are smooth brome (*Bromus inermis*) and reed canary grass (*Phalaris arundinacea*). Smooth brome is managed in the prairie with prescribed fire and reed canary grass is controlled with herbicide. See Appendix A (Bolli, 2006) for the complete list of exotic species within the park.

The lowland bur oak woodland is also a rare community type. Below is a description of the vegetation as reported in Rolfsmeier (2007).

> The 60 acres of wooded vegetation at Homestead National Monument primarily represents a closed-canopy forest that has been subject to varying degrees of logging, grazing, fire, and other disturbances since settlement. Some areas within the northern half of the site are relatively undisturbed. In the highest-quality portions of the site, the canopy is dominated by large spreading-crowned bur oaks (*Quercus macrocarpa*) about 60 ft. tall, with scattered large cottonwoods (*Populus deltoides*) and honey-locust (*Gleditsia triacanthos*) among them. A well-defined subcanopy is presently consisting mostly of hackberry (*Celtis occidentalis*) and slippery elm (*Ulmus rubra*) with silver maple (*Acer saccharinum*) conspicuous in lower places, especially along the stream banks. A short shrub layer of coralberry (*Symphoricarpos orbiculatus*) is frequently present, with an herbaceous layer dominated by wood nettle (*Laportea candensis*), sedges (*Carex* spp.,) wingstem (*Verbesina alternifolia*) and early wildrye (*Elymus macgregorii*).
>
> Though they are prominent, bur oaks are not dominant throughout the canopy of the north portion. Immediately along the stream, oaks are absent and the dominant trees include a few large cottonwoods and some tall hackberry and black walnut (*Juglans nigra*). These areas also contain a ground layer with conspicuous patches of stinging nettle (*Urtica dioica*) and Jerusalem artichoke (*Helianthus tuberosus*).
>
> The outer margins of the forest along the prairie margin also lack the characteristic bur oak canopy and are dominated by small to medium trees of hackberry, green ash (*Fraxinus pennsylvanica*),

honey-locust, American elm (*Ulmus americana*), and white mulberry (*Morus alba*). The herbaceous understory along the perimeter includes much Virginia wildrye (*Elymus virginicus*) and a lesser amounts of wood nettle and wingstem than are present under the oak canopy.

The south portion of the forest was extensively logged prior to the establishment of the monument. At present, it has a 40-50 ft. high woody canopy dominated by hackberry and honey-locust, with a few large cottonwoods. The subcanopy and shrub layers are more poorly developed in this area, and the herbaceous understory is evidently less diverse (Mlekush & DeBacker 2003).

Quantitative sampling in the forest in 2002 revealed hackberry to be the most abundant tree in terms of basal area, followed by bur oak, green ash, white mulberry, slippery elm and black walnut. Hackberry was also by far the most abundant tree seedling and sapling encountered, followed by elms, bur oak, eastern red cedar (*Juniperus virginiana*) and honey-locust. Broadleaf herbs constitute the bulk of the herbaceous cover in the understory, with fall-flowering species such as wood nettle, stinging nettle (misreported as *Boehmeria cylindrica* by Mlekush & DeBacker [2003]), and wingstem most abundant. Among the ten most abundant non-tree species listed in the 2002 survey, three were vines, namely Virginia creeper (*Parthenocissus quinquefolia*), greenbrier (*Smilax hispida*), and poison ivy (*Toxicodendron radicans*). The herbaceous understory species with the largest mean cover values include wood nettle, stinging nettle, catchweed bedstraw (*Galium aparine*), wingstem, sedges, nodding fescue (*Festuca subverticillata*), Pennsylvania pellitory (*Parietaria pensylvanica*), Virginia wildrye, and violets (*Viola* spp.). A list of 116 species observed in the Cub Creek woods is included in Mlekush & DeBacker (2003).

3.3 Cultural Resources

The land which is now Homestead National Monument of America has been used by humans for approximately 2,000 years. The first inhabitants were Indian tribes engaged in simple agriculture and hunting in the area. During the 18th and 19th Centuries, Euro-Americans began to travel west; traders and trappers were active in the area. In 1857, the area was surveyed. In 1862, a squatter cleared a portion of the tallgrass prairie and built a simple log cabin near Cub Creek. A few months later in 1862, Daniel Freeman bought the squatter's interest in the land, and filed a claim under the Homestead Act (National Park Service, 2000).

The original park boundary (and most of the current boundary) is the same land boundary used by Daniel Freeman when he filed his homestead claim on this 160-acre tract of land. The "T" shaped boundary was selected by Freeman to provide the three essential elements for a successful homestead - timber, water resources, and tillable land.

Within the prairie are the remains of old State Hwy 4 which followed an old freight road. There are also several Freeman Family home sites. Daniel and Agnes Freeman are buried in a plot along the east boundary of the park in an area that overlooks their claim. A Daughters of the American Revolution monument and 1962 time capsule are also located on the prairie.

The Palmer-Epard Cabin, built in 1867 at a location 14 miles from the present-day monument, was donated to the National Park Service in 1950. It is located near the east end of the Osage orange hedgerow just east of the Freeman homestead claim.

The Freeman School, built in 1872, is located 1/4 mile west of the Education Center. This one-room schoolhouse was the venue of 95 years of education for area students as well as serving as a site for a voting precinct, Grange meetings, religious services, and community recreation, such as box suppers. In addition to the brick schoolhouse, there is an attendant storage shed as well as two privies that are over 50 years old.

The park houses a museum collection of more than 60,000 objects at the Heritage and Education Centers, part of which are on display. This collection mostly represents the interpretive period from 1862 to 1936.

Along the south boundary is an Osage orange hedgerow. This is a historic feature as it was planted and established by Daniel Freeman in an effort to delineate his south property line and to serve as a windbreak and fencerow. While Osage orange is an exotic species originating from southern latitudes of the United States of America, it represents a significant feature of the landscape and will be maintained.

Archeology: The proposed trail lies within the two zones of concentration as defined by the Midwest Archeological Center. The two zones of probable concentration are "Freeman Homestead" and "Homestead National Monument Prehistoric Site". The new trails will capitalize on the setting of the original Freeman transportation routes and will be built within these zones of concentration. Both zones have been extensively surveyed. Two surveys focused on the specific location of the proposed trail. Schoen and Bleed performed the most intensive survey in 1986 doing a "100% surface survey and warranted sub-surface testing". From this examination, Schoen and Bleed identified two archeological sites, the first was a "probable Central Plains tradition habitation" and the second was the "Freeman Homestead and related properties" site. It is here that portions of the current trail system occupy and the relocation efforts would be concentrated. Thomas Thiessen performed the second survey of this area in 2002. He examined the proposed trail sites to assess archeological impact. He concluded that trail relocation "would not negatively impact archeological deposits if ground disturbances were minimized" (Bozell, 2005).

3.4 Visitor Use and Experience

Homestead National Monument of American has two distinct types of visitors. The first are the visitors that select the monument as a destination. For these visitors the monument is not simply another stop on the way to other destinations; rather they chose to drive over 40 miles off the interstate specifically to experience HOME's historic resources and story. Over 40% of HOME visitors are from outside of Nebraska. Most of these out of state visitors come to the monument during the summer months of June – August. They typically plan to stay for several hours but often stay for much longer due to the variety of experiences encountered upon arrival.

The monument's visitor experiences include two facilities, five historic structures and a variety of natural and cultural resources. All of these facilities are tied together by the monument's trail system. Most

visitors' first stop is the Homestead Heritage Center. Opened in 2007, this new facility contains: The National Homesteading Museum, with over 300 photographs, two touchscreen interactive computers, seven audio-visual programs and numerous objects; a film, premiered in 2008; outside exhibits including a one-acre parking lot marked at its corners, a wall with the 30 homesteaded states, heritage orchard and farm field and community garden; and on its grounds the Palmer-Epard cabin built in 1867. From this facility visitor can access the historic Freeman Claim with its 100 acre restored tallgrass prairie and woodland on over 3 miles of trails. Along the trails are interpretive waysides that give visitors the opportunity to learn about a variety of the monument's natural and cultural features. One of the most significant of these cultural features is the Freeman School. Built in 1872, the school is an excellent example of education on the frontier. In addition to accessing the trails and monument features from the Heritage Center, visitors can also do so from the monument's other visitors facility, the Homestead Education Center. When the Heritage Center was opened the old visitor center was remodeled into the Education Center. At the Education Center one can find two temporary exhibit galleries and exhibit area housing the monument's legislative directed collection of farm implements and library. This facility hosts school groups, the monument distance learning programs, and most of the 20+ special events offered each year.

It is the numerous special programs and events that draw the second type of visitors. These are local and regional residents within a 100 mile radius including Lincoln and Beatrice that visit the monument to enjoy a variety of special programs and events. Throughout the year the monument hosts book signings, film showings, "Kids in Parks" programs, Artist in Residence programs, commemoration of historic events and events that honors special months, such as Black History Month, Women's History Month and American-Indian Heritage Month. The monument also hosts annual events that draw over 20,000 visitors a year, such as the Heartland Storytelling Festival, Monumental Fiddling Championship, three day Homestead Days, Howling Homestead and Prairie Appreciation Week. Together it is the destination visitors and special event/program visitors that make up the visitor use and experience.

All people whether a first time visitor or repeat visitor learn about the monument's significance while using and experiencing HOME. Through interpretation and education all visitors are presented the story of how: the monument encompasses a 160-acre homestead claim established on the first day of the Homestead Act's implementation that is commemorative of all homesteads; the Freeman School is an original structure that represents the role of one-room schools through the Homestead Era; the Homestead Act had a profound influence on American migration, immigration, agricultural development, industrial development, federal land policy, native cultures and the landscape of the West; and portions of the reconstructed tallgrass prairie offer historic and scientific research value. It is this rich story that draws over 70,000 visitors to HOME each year.

The experience of the trail system is an important part of the visit for many people. The 1997 Long Range Interpretive Plan states that the trails "will give visitors some comprehension of the expanse of land that equaled a homestead. By physically moving across the land, visitors will experience the reality of human interaction with a specific environment." It goes on to say that the "prairie in its seasonal changes, with corresponding wildlife, responds to all the senses: hearing, seeing, smelling, and touching something of the past, present and future. In this moment one can transcend the present physical experience to both the past and the future in this national park. This link between the physical and the emotional is often the most lasting impression for visitors." (National Park Service, 1997). The trails allow visitors to walk in the footsteps of the first Homesteader, Daniel Freeman, encountering the land in a similar condition to the land that he encountered. Waysides identify the improvements that the Freeman Family made to their claim allowing visitors to better understand the "hardships and the

pioneer life through which the early settlers passed in the settlement, cultivation and civilization of the Great West". (National Park Service, 1999)

Chapter 4 – Environmental Consequences

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of implementing the trail realignment plan, including the No-Action Alternative. Topics analyzed in this chapter include soils, vegetation, visitor use and experience and cultural resources.

General Methodology for Analyzing Impacts:

In accordance with the CEQ regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16) and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts for each resource may vary; therefore, these methodologies are described under each impact topic.

Type of Impact describes the classification of the impact as either *beneficial* or *adverse*, *direct* or *indirect*. The terms "impact" and "effect" are used interchangeably throughout this EA.

- *Beneficial*: An impact that would result in a positive change to the resource when compared to the existing conditions.
- *Adverse*: An impact that causes an unfavorable result to the resource when compared to the existing condition.
- *Direct*: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).
- *Indirect*: Impacts that would occur as a result of the proposed action, but later in time or farther in distance, but still reasonably foreseeable from the action (40 CFR 1508.8).

Cumulative Impact Scenario Analysis Methodology

CEQ regulations require the assessment of cumulative impacts in the decision making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the no-action and action alternatives.

Cumulative impacts were determined by combining the impacts of the action alternatives (implementation of the trails realignment plan) with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at the Monument and, if applicable, the surrounding region.

Past actions that have impacted the area where the trails are located include impacts to the soil. The soils at HOME, especially in the tallgrass prairie unit have long been subjected to impacts as the result of management and development. Starting in the 1860's the Freeman Family farmed a large portion of what is now the restored prairie. Much of the area was also used as building sites and corrals. State Hwy 4 ran through the monument from the late 1860's to 1954. When that section of road was abandon no work was done to obliterate the road ditches or the road bed. The route of the old highway would have been severely compacted due to the number of vehicles and the continued maintenance of the road while it was still the main route between Beatrice and Plymouth, Nebraska. Since the NPS started the restoration of the prairie in 1939 machinery use on the prairie has been localized and limited. Before 1939 most of the equipment used was light enough that it did not compact soils beyond

the first few inches of soil. Since then the NPS has continued to use relatively small equipment to conduct management action such as mowing of fire breaks and thickets and application of herbicides.

Future actions that could have an impact on the trails include a plan for a trail that would link the monument to a Beatrice, Nebraska trail system, however at this time unwilling sellers along the route from Beatrice to the monument make it unlikely that this trail will be developed. If the trail is developed it is likely to lead to some increase in visitation at least for those who utilize the trails system. The second potential action that could impact the trail system in the future is trail development on the 140 acres of land that The Friends of Homestead owns directly south of the west and middle forties of the Freeman Homestead. Part of the funding agreement that they entered into talked about installing trails through the area once it was restored to native prairie. Once they create the trails it is expected that they will tie into the monuments trail system most likely at the southwest corner of the property. If this happens it could increase the amount of traffic on the "Weather Station Trail" that leads to the southwest corner making it necessary to rock that portion of the trail.

Assessing Impacts Using CEQ Criteria:
The impacts of the alternatives are assessed using the CEQ definition of "significantly" (1508.27), which requires consideration of both context and intensity:

- **Context:** Significance varies with the physical setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale, rather than in the world as a whole. This means that the significance of any action may be analyzed within the appropriate context, such as society as a whole (human, national), the affected region, or the locality. Both short-term and long-term effects are relevant which is often characterized as duration.
    - **Duration:**
        1. *Short-term*: impacts generally last only during the initiation and implementation of the project, and the resources resume their pre-project conditions following the implementation of the project.
        2. *Long-term*: impacts last beyond the initiation and implementation of the project, and the resources may not resume their pre-project conditions for a longer period of time.
- **Intensity:** this refers to the severity of the impact. The following should be considered in evaluating intensity:
    1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
    2. The degree to which the proposed action affects public health or safety.
    3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
    4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
    5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
    6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
    7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to

anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the impact.

For each impact topic analyzed, an assessment of the potential significance of the impacts according to context, intensity and duration is provided in the "conclusion" section that follows the discussion of the impacts under each alternative. Intensity of the impacts fully considers the relevant factors from the list above. Intensity factors that do not apply to a given resource topic and/or alternative are not discussed.

4.1 Soils

Methodology and Assumptions

The restoration of prairie grasses has eliminated erosion that was occurring when the monument was first established. In the trail corridor best management practices such as water bars, culverts, and rocked trail surface have been used to successfully eliminate erosion. Analyses of possible impacts to soils were based on the review of existing literature and professional judgment.

Study areas

Impacts to soils will be analyzed for the project areas where the trails presently are, where they will be installed and where they will be removed.

IMPACT DEFINITIONS

The impact intensities for soils were defined as follows:

- **Negligible**: The action would result in a change to soils, but the change would be so small that it would not be of any measurable or perceptible consequence.
- **Minor**: The action would result in impacts on soils, but the change would be small and localized and of little consequence.
- **Moderate**: The action could result in a change to soils; the change would be measurable and of consequence. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.
- **Major:** The action would result in a noticeable change to soils; the change would be measurable and would result in a severely adverse impact. Mitigation measures necessary to offset adverse impacts would be needed and would be extensive, and their success would not be guaranteed.
- **Beneficial**: A beneficial impact would occur when actions were taken to actively preserve, stabilize or return soils to its pre-existing condition.
- **Duration**: Short-term impacts occur during the implementation of the alternative; long-term impacts extend beyond implementation of the alternative.

Alternative 1: No Action
Analysis: The main concerns with the soils are erosion and compaction. Leaving the trails as they are would have no new beneficial or adverse, direct or indirect impacts on the soils now or in the future.

Cumulative Impacts: Connecting the current trail system with trails from Beatrice or with the Friends of Homestead Land and assumed increases in use will not increase the potential for erosion or an increase in the amount of compaction of the soil.

Conclusion: The No Action Alternative would not have additional impacts on the soils within or outside of the trail corridor.

Alternative 2: HOME Diamond Alternative
Analysis: This alternative would create 0.45 mile (730 meter) of new trail and remove 0.37 miles (600 meters) of the current trail. Where the new trail is installed the construction of the trail along with the foot traffic and maintenance of the trail would compact the soil. Using best management practices while constructing the trails and continued monitoring will ensure that the trails do not erode. The portions of the trail that are realigned with the "Old State Highway 4" will again be traveling on an area that is already severely impacted with compaction.

Moving Section 1 will provide a beneficial localized direct impact to the soil, removing the trail from an area that is most likely only compacted for the first few inches of the surface and should recover within a few years to a location where the soil is compacted to maybe as much as a foot from when that area was a graveled highway. No potential for erosion exists in this section.

Creating Section 2 will have very minor adverse impacts on the soil. It is being created on the trace of the Old State Highway 4, an area where the soils are already very compacted, thus limiting any new adverse impacts. No potential for erosion exists in this section.

Moving Section 3 will have long term direct moderate localized adverse impacts by increasing compaction where new trail is created and long term moderate localized beneficial impacts on the trail portion that is abandon. The new trail is located outside of the drip-line of the trees, thus the soil compaction that does occur will not impact them. No potential for erosion exists in this section.

Moving Section 4 will have long term direct moderate localized adverse impacts by increasing compaction where new trail created and long term moderate localized beneficial impacts on the trail portion that is abandon. The new trail is located outside of the drip-line of the Osage orange trees, thus the compaction that does occur will not impact them. In this section the potential for erosion does exist. The soil on the slopes where the trail will be removed and where it will be created is prone to erosion. The current trail has water bars and chipped limestone installed to mitigate an erosion issue. When that trail is removed it will be necessary to remove the chipped limestone, grade the area so it matches the land on either side of the trail and then to use erosion control matting to assist in getting new vegetation started. The new trail created will need to be monitored and any erosion issues will need to be dealt with as soon as they are noticed. Water bars in this new section may be warranted.

Cumulative Impacts: The Diamond Alternative when considered with past, present or reasonably foreseeable actions including connecting the proposed trail system with trails from Beatrice or with the Friends of Homestead Land and assumed increases in use will not increase the potential for erosion or an increase in the amount of compaction of the soil.

Conclusion: The impacts from implementing the Diamond Alternative would have both short term (from the construction) and long term moderate adverse and moderate beneficial impacts on soils. The impacts would be direct and restricted to the immediate surroundings of the new trail and structures and beneficial impacts to the areas where the trails are to be removed.

Alternative 3: HOME Triangle Alternative
Analysis:
The impacts to the soils because of the implementation of the Triangle Alternative are the same as the impacts listed for the Diamond Alternative. In addition to those impacts there would be the impacts from moving Section 5.

Moving Section 5 would increase the amount of new trail created and the amount of trail that would need to be restored. Moving Section 5 will have direct adverse impacts by increasing compaction where new trail created and beneficial impacts on the trail portion that is abandon. No potential for erosion exists in this section.

Cumulative Impacts: The Triangle Alternative when considered with past, present or reasonably foreseeable actions including connecting the proposed trail system with trails from Beatrice or with the Friends of Homestead Land and assumed increases in use will not increase the potential for erosion or an increase in the amount of compaction of the soil.

Conclusion: The impacts from implementing the Triangle Alternative would have both adverse and beneficial impacts on soils. The impacts would be direct and restricted to the immediate surroundings of the new trail and structures and beneficial impacts to the areas where the trails are to be removed. However, excessive use of these trails could also result in long-term soil impacts as compared to the short-term construction impacts. Overall, impacts to soils associated with the Diamond Alternative do not meet any of the significance criteria.

4.2 Vegetation

Methodology and Assumptions
The main concerns about adverse impacts affecting vegetation are:

- Introduction of exotic species by either bringing them in with the rock needed for surfacing the trail, bringing them in with equipment that has been used offsite and the disturbance created by the project that creates a perfect location for exotic species to grow.
- The removal of established vegetation which could lead to extirpation of locally rare plant species.
- Trails could cause soil compaction which could lead to declines of death of nearby vegetation, especially trees.

Current literature and professional judgment were used to determine possible impacts.

Study Area
The geographic study area for impacts on vegetation includes the trails and the areas adjacent to the trails. Exotic species introduction could impact the entire monument.

IMPACT DEFINITIONS

The impact intensities for vegetation were defined as follows:

- **Negligible**: Some individual plants could be affected as a result of the alternative, but measurable or perceptible changes in plant community size, integrity, or continuity would not occur. The impacts would be on a small scale.
- **Minor**: The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. The viability of the plant community would not be affected and the community, if left alone, would recover.
- **Moderate**: The alternative would affect some individual native plants and a relatively large area in the native plant community that would be readily measurable in terms of abundance, distribution, quantity, or quality. Mitigation to offset adverse impacts could be extensive and would likely be successful.
- **Major:** The alternative would have a considerable effect on native plant communities that would be readily apparent, and would substantially change vegetation community types over a large area in and out of the park.
- **Beneficial**: A beneficial impact would occur when actions were taken to actively preserve, stabilize or return vegetative communities to its pre-disturbance condition.
- **Duration:** Short-term impacts occur during the implementation of the alternative; long-term impacts extend beyond implementation of the alternative.

Alternative 1: No Action

Impacts: The no action alternative would continue to have very localized adverse impacts to the vegetation in the area where the boardwalk is located southeast of the D.A.R. Monument. The shade created by the boardwalk is promoting the growth of shade tolerant species at the expense of the prairie cordgrass that is growing in the rest of the wetland.

Cumulative Impacts: No cumulative impacts to the vegetation are expected, however if HOME's trail system is connected with the Beatrice trail system and the trail system on the Friends Land there is a potential for users to transport seeds spreading both native and nonnative plant species along the trail system.

Conclusion: The No Action Alternative has very insignificant indirect adverse impacts on vegetation by changing the species composition of the plants in the wetland. Keeping the trails where they are and not disturbing new areas is a benefit to the vegetation as any disturbance can provide a location for nonnative species to become established and spread to other parts of the monument.

Alternative 2: HOME Diamond Alternative

Analysis: The trail created by the HOME Diamond Alternative would remove a 10 feet wide swath of vegetation along the entire length of the new trail. This removal and continued maintenance of the trail would be a direct, long-term, minor adverse impact to the vegetation. However, indirectly, trail users could further the spread of invasive. The intensity of the impact to vegetation would be minimal in overall context. Indirect beneficial impact would occur by decreasing the fragmentation of the tallgrass prairie unit which will lead to fewer avenues for exotic species to get to the interior of the prairie and make the fire management program at the monument more effective. Overall, impacts to vegetation associated with the HOME Diamond Alternative while there are both direct and indirect minor impacts restoration of the abandon trail with locally harvested seeds and continued monitoring and removal of invasive exotic species will mitigate the potential for greater adverse impacts. With the Diamond

Alternative it does decrease the fragmentation of the restored prairie. This will be an indirect long-term beneficial impact.

Cumulative Impacts: If HOME's trail system is connected with the Beatrice trail system and the trail system on the Friends land there is a potential for users to transport seeds spreading both native and nonnative plant species along the trail system.

Conclusion: Impacts to vegetation associated with construction and maintenance would be both direct and indirect. The direct impacts would be restricted to the immediate surroundings of the trail placement. The introduction and promotion of exotic species would be an indirect impact.

Alternative 3: HOME Triangle Alternative
Analysis: The impacts from implementing the HOME Triangle Alternative are the same as for the Diamond Alternative; however the installation of Section 5 will have additional indirect moderate adverse impacts because of the fragmentation of the prairie within the current Farm Loop Trail. This alternative poses has the greatest potential to adversely impact the vegetation. Impacts associated with construction would be direct and restricted to the immediate surroundings of the trail placement. However, indirectly, trail users could further the spread of invasive. The intensity of the impact to vegetation would be minimal in overall context. Indirect beneficial impact would occur by decreasing the fragmentation of the tallgrass prairie in the south west part of the prairie which will lead to fewer avenues for exotic species to get to the interior of the prairie and make the fire management program at the monument more effective.

Cumulative Impacts: If HOME's trail system is connected with the Beatrice trail system and the trail system on the Friends land there is a potential for users to transport seeds spreading both native and nonnative plant species along the trail system.

Conclusion: Overall, impacts to vegetation associated with the HOME Diamond Alternative while there are both direct and indirect minor impacts restoration of the abandon trail with locally harvested seeds and continued monitoring and removal of invasive exotic species will mitigate the potential for greater adverse impacts.

4.3 Cultural Resources

Methodology and Assumptions
The significant cultural resources that could be affected by the implementation of this plan are the trace of the "Old State Highway 4", the boundary demarcating the 160 acre Freeman Homestead Claim, the Osage orange hedgerow, the cottonwood trees growing along the "Old State Highway 4", and the surface and subsurface archeologically features.

Study Area
The geographic study area for impacts on cultural resources when referring to cultural landscape refers to the entire monument, impacts to archeological resources and culturally significant vegetation would be limited to the areas disturbed by construction activities.

IMPACT DEFINITIONS
The impact intensities for Cultural Resources were defined as follows:

- **Negligible**: Trail realignment would not have the potentially disturb surface or subsurface archeological material. Actions would have no impacts on culturally significant vegetation.
- **Minor**: Trail realignment could potentially disturb surface or subsurface archeological material. Measures would be taken to ensure if archeological features are encountered they are protected and preserved. In the event archeological features are encountered, measures will be in place to ensure they are protected and preserved. Actions would not have long term impacts on culturally significant vegetation.
- **Moderate**: The action could have direct or indirect negative impacts on the culturally significant structures or plants. Archeological features could be destroyed or never found.
- **Major**: Actions would have direct or indirect negative impacts on the culturally significant structures or plants. Archeological features could be destroyed or never found.
- **Beneficial**: A beneficial impact would occur when actions were taken to actively preserve access, protect culturally significant structures or plants and ensure that archeological resources are not damaged.
- **Duration:** Short-term impacts occur during the implementation of the alternative; long-term impacts extend beyond implementation of the alternative.

Alternative 1: No Action
Analysis: No culturally significant structures or plants would suffer any adverse impacts.

Cumulative Impacts: None

Conclusion: While there is a minor impact to the ability to access the cultural resources the integrity or condition of the culturally significant structures or plants would not be impacted. The potential for impacts to archeological resources do not exist with this alternative.

Alternative 2: HOME Diamond Alternative
Analysis: No impacts to the culturally significant structures or plants would occur. Archeological resources could be directly moderately adversely impacted; however archeological surveys and having staff experienced with archeology monitoring the construction will mitigate the potential impacts.

Cumulative Impacts: None

Conclusion: The impacts to the cultural resources would be minor because of the potential to impact archeological resources.

Alternative 3: HOME Triangle Alternative
Impacts: No impacts to the culturally significant structures or plants would occur. Archeological resources could be directly minor adversely impacted; however archeological surveys and having staff experienced with archeology monitoring the construction will mitigate the potential impacts.

Cumulative Impacts: None

Conclusion: The impacts to the cultural resources would be minor because of the potential to impact archeological resources.

4.4 Visitor Use and Experience

Methodology and Assumptions
The trails are used by several different users. They can be divided up by their desired experience. The main user groups are: walkers – people who use the trails for fitness purposes, naturalists – people who want to experience the biological communities of the monument, and general visitors who use the trails to get from the Heritage Center to the Education Center while learning about the land by visiting various interpretive signs and displays.

Study area
The geographic study area for impacts to how this project affects the visitor use of the monument and the visitors experience would include the entire park.

IMPACT DEFINITIONS

- **Negligible:** Effects are at the lowest levels of detection with no adverse consequences. Access to the different sites within the monument is not impaired. Visitors' opportunity to walk the routes that the Freeman family used is not impaired. Sites are interpreted with signage that helps visitors understand the impacts the 1862 Homestead Act had on the United States and how Daniel Freeman, the Nation's first homesteader, improved his claim. Visitors are able to experience views from the Heritage Center that are dominated by natural features.
- **Minor**: Visitors are not able to access the entirety of certain culturally significant features of the monument. The visitors' opportunity to walk the routes that the Freeman family used is limited. New structures and trails are visible, but not dominating the landscape from the Heritage Center.
- **Moderate**: Visitors are not able to access certain culturally significant features of the monument. Trails do not interpret or provide access to the routes the Freeman family used. Visitors are able to experience views from the Heritage Center that are dominated by natural features.
- **Major:** Visitors are not able to access any culturally significant features. New structures within the park dominate the views from the Heritage Center.
- **Beneficial**: Access is increased; the visibility of manmade structures/improvements within the park is decreased.
- **Duration:** Short-term impacts would occur during the construction of the new trails. Long-term impacts would persist after implementation of the alternative.

Alternative 1: No Action
Analysis: Visitors would continue to lose the opportunity to travel the road that provided the Freeman family and others the connection to Beatrice, a place for entertainment and commerce. Visitors would also continue to lose the opportunity to walk the southern boundary of the monument. The boardwalk would continue to be visible within the prairie. Visitors using the trails for physical fitness are able to walk several different loops, minimizing the amount of backtracking that they need to do and easily allowing them the opportunity to customize the distance that they want to walk or run.

Cumulative Impacts: None

Conclusion: By choosing the No Action Alternative direct minor impacts to the cultural resources would continue to occur because of the impact caused by the view of the boardwalk from the Heritage Center and the inability to travel the old state highway through the monument.

Alternative 2: HOME Diamond Alternative
Analysis: Under this alternative the impacts to visitor use and the visitors experience would be beneficial by increasing access to culturally significant features and routes used by the Freeman family. Visitors would also benefit from the addition of the interpretive patio. The patio would offer a new experience for the visitors. The building and placement of the interpretive gathering patio is such that it will not add manmade structures to the view from the Heritage Center. The removal of the boardwalk would benefit the view from the Heritage Center. Visitors using the trails for physical fitness are able to walk several different loops, minimizing the amount of backtracking that they need to do and easily allowing them the opportunity to customize the distance that they want to walk or run.

Cumulative Impacts: None

Conclusion: This alternative would have direct beneficial impacts to visitor use and the visitor experience by providing greater access to culturally significant resources and transportation routes.

Alternative 3: HOME Triangle Alternative
Analysis: The impacts would include those listed above for the Diamond Alternative in addition there would be impacts to the visitor use and experience from the addition of the Section 5 of the proposed trail. Impacts include the increased need to backtrack on trails already seen when accessing them from the Education Center. Interpretive walks involving more than one group starting from the Education Center would be forced to start on the same section of trail.

Cumulative Impacts: None

Conclusion: This alternative would have direct beneficial impacts to visitor use and the visitor experience by providing greater access to culturally significant resources and transportation routes.

Chapter 5 – Consultation and Coordination

The following organizations were consulted during the preparation of this environmental assessment:

- Internal Scoping:
  Internal scoping was conducted by an interdisciplinary team of professionals from Homestead National Monument. In late February interdisciplinary team members visited the site and discussed the various alternatives, potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects.
- External Scoping:
  Public scoping was conducted to inform the public about the proposed trail realignment projects at the Monument and to generate input on the preparation of this EA. To initiate external scoping, a public meeting was conducted on December 10, 2010 and with the Pioneer Homeowners Association on March 13, 2013
- Consultation: A letter to the Fish and Wildlife Service regarding threatened and endangered species was sent on May 29, 2013. A letter to the Nebraska State Historic Preservation officer was sent on May 29, 2013 describing the project. See Appendix A for the letters and their responses.

Chapter 6 - References

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6.2 Preparers and Consultants

Prepared by:

Jesse Bolli, Resource Management Specialist, Homestead NM of America
Blake Bell, Historian, Homestead NM of America
Merrith Baughman, Chief of interpretation and Resource Management, Homestead NM of America

Appendix A – Consultation with Other Agencies

United States Department of the Interior

NATIONAL PARK SERVICE
Homestead National Monument of America
8523 W. State Hwy 4
Beatrice, Nebraska 68310-0673
www.nps.gov/home

IN REPLY REFER TO:

1.A.2. (HOME)

May 29, 2013

Nebraska Field Supervisor
U.S. Fish and Wildlife Service
Nebraska Ecological Services Field Office
Federal Building, 203 West Second Street
Grand Island, NE 68801

Dear Nebraska Field Supervisor:

This letter is requesting informal consultation under the Endangered Species Act for Homestead National Monument of America, a National Park Service site which is located in Gage County, Nebraska 4 miles northwest of Beatrice (Legal location township 4 north range 5 east section 26). During 2013 Homestead will be completing several projects including invasive and exotic plant removal using chemical and mechanical means (mowing with rotary mower, hand pulling or hand cutting) within the tallgrass prairie and woodland, prescribed burn of a section of tallgrass prairie in October, mowing of trails and roadsides, realignment of the trail system, installation of an interpretive shelter, and construction of turn lanes at the intersection of Nebraska Highway 4 and SW75 Road. See attached map.

We have reviewed the Federal and State listed species for Nebraska and believe that our actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. We would like your concurrence. Your list for Nebraska includes a total of 20 threatened, endangered, and candidate species of invertebrates, fishes, reptiles, amphibians, birds, mammals, and plants. The county list from the Nebraska Game and Parks Commission lists two species for Gage County, the Massasauga (*Sistrurus catenatus*) and Western Prairie Fringed Orchid (*Platanthera praeclara*). None of those species have been documented within or nearby the monument. The formal monitoring at the monument is documented at http://science.nature.nps.gov/im/units/htln/inventories.cfm. Through all of our monitoring activities the NPS has not documented any state or federal listed species. If you have questions regarding the monitoring at Homestead please contact Resource Management Specialist Jesse Bolli at Jesse_Bolli@nps.gov or 402-223-1705.

Sincerely,

Mark Engler
Superintendent

Attachment

HOME:JB:KT:May 2013:P/Kelly/Outgoing Letters/Ranger Letters/Fish and Wildlife Service5-29-13

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Nebraska Field Office
203 West Second Street
Grand Island, Nebraska 68801

June 12, 2013

FWS-NE: 2013-361

Mark Engler
Homestead National Monument of America
8523 W. State Hwy 4
Beatrice, NE 68310-0673

RE: Homestead National Monument

Dear Mr. Engler:

This responds to your May 31, 2013, request to the U.S. Fish and Wildlife Service (Service) regarding the subject project. The Service has responsibility for the conservation and management of fish and wildlife resources for the benefit of the American public under the following authorities: 1) Endangered Species Act of 1973, 2) Fish and Wildlife Coordination Act, 3) Bald and Golden Eagle Protection Act, and 4) Migratory Bird Treaty Act. The National Environmental Policy Act requires compliance with all of these statutes and regulations.

Based on the information you have provided, at this time, it appears unlikely that your project would have significant environmental impacts on the trust resources under our authority. Should changes to the proposed project occur or new information regarding fish and wildlife resources become available, further consultation with the Service should be initiated to assess any potential impacts.

All federally listed species under ESA are also State-listed under the Nebraska Nongame and Endangered Species Conservation Act. However, there are also State-listed species that are not federally listed. To determine if the proposed project may affect State-listed species, the Service recommends that the project proponent contact Michelle Koch, Nebraska Game and Parks Commission, 2200 N. 33rd Street, Lincoln, NE 68503-0370.

The Service appreciates the opportunity to review and comment on the subject project. Should you have questions regarding these comments, please contact Mrs. Angelina Wright within our office at angelina_wright@fws.gov or (308)382-6468, extension 21.

Sincerely,

for Michael D. George
Nebraska Field Supervisor

cc: NGPC; Lincoln, NE (Attn: Michelle Koch)
NGPC; Lincoln, NE (Attn: Carey Grell)

United States Department of the Interior

NATIONAL PARK SERVICE
Homestead National Monument of America
8523 W. State Hwy 4
Beatrice, Nebraska 68310-0673
www.nps.gov/home

IN REPLY REFER TO:

State Historic Preservation Office
Nebraska State Historical Society
PO Box 82554
Lincoln, NE 68501-2554

Re.: Homestead Trail Realignment Project

Dear Mr. Bob Puschendorff :

The purpose of this correspondence is to notify your office of the National Park Service's proposed undertaking to realign portions of the trail system and the construction of an outdoor interpretive gathering plaza at Homestead National Monument of America.

Project Description

Homestead National Monument of America is proposing to realign portions of the trail system in their 100-acre tall grass prairie. This project will realign the trail system with historic transportation corridors from the homesteading period as called for in the Cultural Landscape Report. The project will also add an interpretive gathering plaza about 100 meters east of a D.A.R. monument that will provide a formal location for visitors to enjoy the views of the Freeman Homestead Claim.

The purpose of the proposed project is to enhance the park's cultural landscape by: reconstructing the original route of the old State Highway 4 across the Freeman Family Homestead; emphasizing the role of this road in the life of the Freeman Family as they developed their Homestead Claim; and providing additional educational, informational, and recreational opportunities for park visitors as it relates to the old State road.

Project Need and Objectives

The project is needed because by allowing visitors to literally walk in the footsteps of homesteaders they will better understand the role that a good transportation route played in homesteaders' lives and open new areas of the monument to the visitors so they can better understand the cultural significance of the monument's features.

The proposed project has the following objectives:

a. Realign the trails with Old State Highway 4 to enhance visitor understanding about the importance of good transportation to homesteaders

b. Provide a formal location on the prairie for interpretive and educational programming; and

c. To extend the length of the trails to increase opportunities to increase individual physical fitness while enjoying nature

Potential Impact on Cultural Resources

The proposed trail lies within two zones of "probable" concentration as defined by the National Park Service's Midwest Archeological Center. The two zones of probable concentration are "Freeman Homestead" and "Homestead National Monument Prehistoric Site". The new trails will capitalize on the setting of the original Freeman transportation routes and be built within these zones of concentration. Both zones have been extensively surveyed. Two surveys focused on the specific location of the proposed trail. Schoen and Bleed performed the most intensive survey in 1986 doing a "100% surface survey and warranted sub-surface testing". From this examination, Schoen and Bleed identified two archeological sites, the first was a "probable Central Plains tradition habitation" and the second was the "Freeman Homestead and related properties" site. It is here that portions of the current trail system occupy and the relocation efforts would be concentrated. Thomas Thiessen performed the second survey of this area in 2002. He examined the proposed trail sites to assess archeological impact. He concluded that trail relocation "would not negatively impact archeological deposits if ground disturbances were minimized" (Bozell, 2005).

Required Activity to Complete Realignment and Construction of the Interpretive Shelter

Trail Realignment

In an effort to minimize potential disturbance, the realignment of the trail will only require a skid-steer loader or a small farm tractor to remove existing surface vegetation. All machinery will be required to stay on the existing trail system and proposed realigned trails.

The new trail located on the old road trace will be constructed by first mowing the proposed walking surface with a five foot wide shedder attached to the front of a skid-steer tracked loader. The area will then be tilled with the same skid-steer loader. Once the area has been tilled crushed limestone will be applied to a depth of four inches and then compacted.

Portions of the trail that will require removal will be tilled and then replanted with locally harvested native plants in late fall.

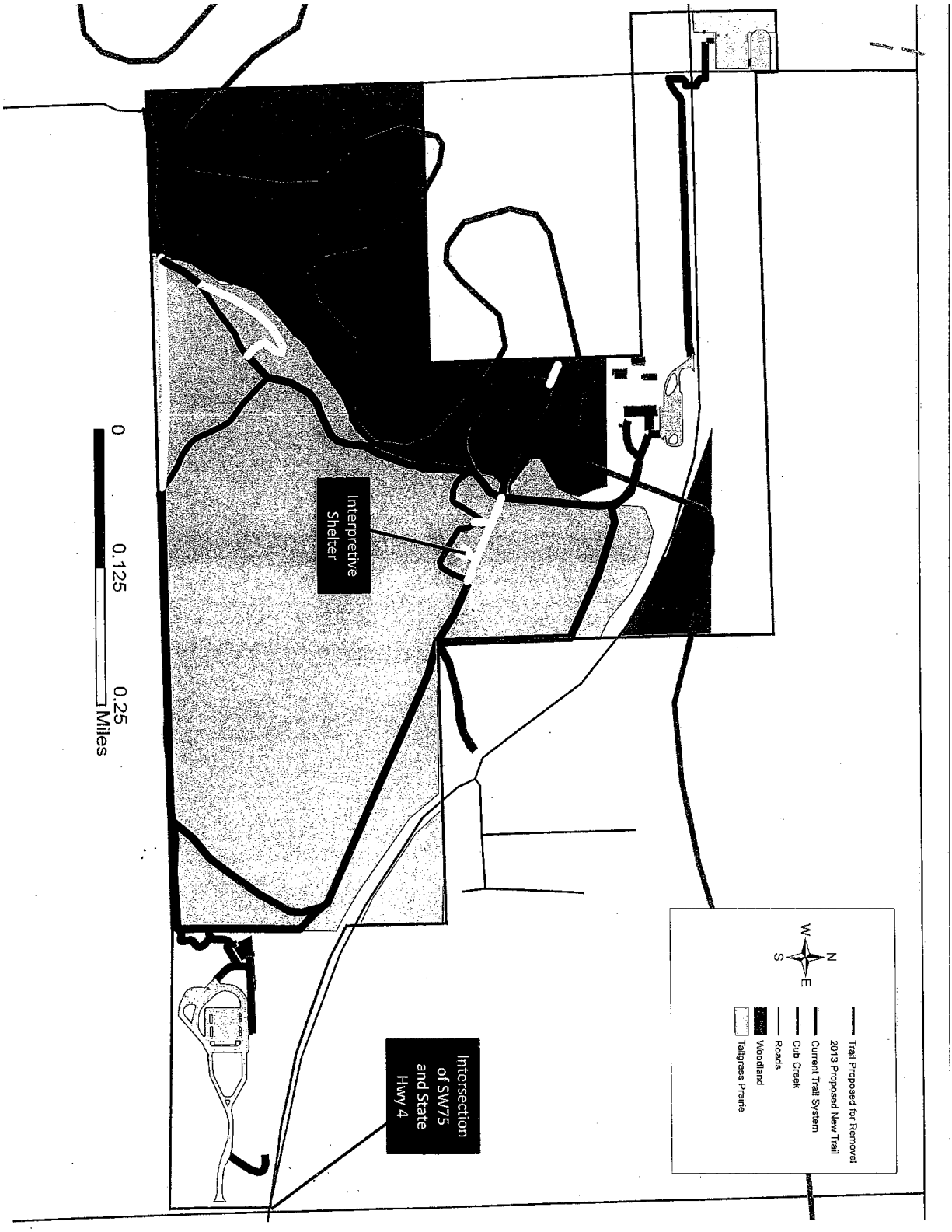
Interpretive Shelter

The Interpretive Shelter will require posts to be inserted into the ground at a depth of 3 foot. In order to place the posts holes will need to be dug to a depth of 3 foot and a width of 1 foot. The remaining construction will take place above the surface. Construction activities will be monitored by staff experienced with archeology to mitigate the potential impacts.

Sincerely,

Mark Engler
Superintendent

Enclosure


Trail Proposed for Removal
2013 Proposed New Trail
Current Trail System
Cub Creek
Roads
Woodland
Tallgrass Prairie
N
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Interpretive Shelter
Intersection of SW75 and State Hwy 4
0
0.125
0.25
Miles

Nebraska
STATE HISTORICAL SOCIETY

11 June 2013

Mark Engler
National Park Service
8523 W. State Hwy 4
Beatrice, NE 68310-0673

Re: Homestead Trail Realignment
Gage Co.
H.P. #1305-138-01

Dear Mr. Engler:

A review of our files indicates that the referenced project does not contain recorded historic resources. It is our opinion that no survey for unrecorded cultural resources will be required. Your undertaking, in our opinion, will have no effect for archaeological, architectural, or historic properties. This review does not constitute the opinions of any Native American Tribes that may have an interest in Traditional Cultural Properties potentially affected by this project.

There is, however, always the possibility that previously unsuspected archaeological remains may be uncovered during the process of project construction. We therefore request that this office be notified immediately under such circumstances so that an evaluation of the remains may be made, along with recommendations for future action.

Sincerely,

Terry Steinacher
H.P. Archaeologist

Concurrence:

L. Robert Puschendorf
Deputy NeSHPO

1500 R Street
PO Box 82554
Lincoln, NE 68501-2554
p: (800) 833-6747
(402) 471-3270
f: (402) 471-3100
www.nebraskahistory.org

Appendix B – Best Management Practices for Trail Construction

Trail Design: Director's Order #77, NPS Natural Resource Management Reference Manual 2006 sets the goal of sustainable trails as stated: *Sustainability of backcountry trail corridors is defined as the ability of the travel surface to support current and anticipated appropriate uses with minimal impact to the adjoining natural systems and cultural resources. Sustainable trails have negligible soil loss or movement and allow the naturally occurring plant systems to inhabit the area, while allowing for the occasional pruning and removal of plants necessary to build and maintain the trail. If well-designed, built, and maintained, a sustainable trail minimizes braiding, seasonal muddiness and erosion. It should not normally affect natural fauna adversely nor require re-routing and major maintenance over long periods of time.*

The five essential elements of sustainable trails according to the IMBA (2004) are:

1. The Half Rule. This rule states that the trail's grade shouldn't exceed half of the grade of the hillside or sideslope that the trail traverses.
2. The Ten Percent Average Trail Grade Guideline. This general guideline applies to most all soil type aiding in the planning of a sustainable trail.
3. Maximum Sustainable Trail Grades. This guideline states that the maximum sustainable grade is dependent on several different factors including soil type, number of users, annual rainfall and other local factors. Maximum grade averages around 15-20%. Experience is the best judge of what the maximum trail grade will be, without experience you should be conservative.
4. Grade Reversals. Installing frequent grade reversals will help to force water from the trail.
5. Outslope. As the trail contours across a hillside, the downhill or outer edge of the trail should tilt down and away from the high side. The tilt is called outslope. A general recommendation is that all trails be built with a five percent outslope. With that said it is recognized that with age the trail will become concaved in the middle which will funnel the water down the middle of the trail. Frequent grade reversals will force the funneled water from the trail.

(Adapted from 2004, *Trail Solutions: IMBA's Guide to Building Sweet Singletrack)*

At Homestead much of the proposed trail is relatively level. A level trail creates problems because the water does not run off thus creating muddy areas. To alleviate that issue it will be necessary to armor much of the trail. At Homestead great success has been had using crushed limestone. Where needed the top three to four inches of soil will be removed and the crush limestone and fines will be compacted to create the trail surface. The trail will still need to be constructed using the five essential elements of sustainable trails. In level areas it may be necessary to crown the trail, however if this is done care should be taken to ensure that dams are not created.